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Chasina Timber Sale

Draft Environmental Impact Statement

Volume II: Appendices A-J



Acronymns And Symbols

ADF&G	Alaska Department of Fish and Game
AHMU	Aquatic Habitat Management Unit
ANCSA	Alaska Native Claims Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
ASQ	Allowable Sale Quantity
BBF	One Billion Board Feet
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFL	Commercial Forest Land
CFR	Code of Federal Regulations
CZMA	Coastal Zone Management Act of 1976
DBH	Diameter at Breast Height
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EVC	Existing/Expected Visual Condition
FEIS	Final Environmental Impact Statement
FSH	Forest Service Handbook
FSM	Forest Service Manual
GIS	Geographic Information System
IDT	Interdisciplinary Team
KPC	Ketchikan Pulp Company
KV	Knutsen-Vandenberg Act
LTF	Log Transfer Facility
LUD	Land Use Designation
LWD	Large Woody Debris (same as LOD)
MBF	One Thousand Board Feet
MELP	Multi-Entry Layout Process
MIS	Management Indicator Species
MM	Maximum Modification
MMBF	One Million Board Feet
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
P	Primitive
PR	Partial Retention
R	Retention
RM	Roaded Modified
RN	Roaded Natural
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
SHPO	State Historic Preservation Officer
SPM	Semi-Primitive Motorized
SPNM	Semi-Primitive Nonmotorized
TLMP	Tongass Land Management Plan
TRUCS	Tongass Resource Use Cooperative Survey
TTRA	Tongass Timber Reform Act
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFWS	United States Fish and Wildlife Service
VCU	Value Comparison Unit
VQO	Visual Quality Objective
WAA	Wildlife Analysis Area

Acknowledgments

Front cover: By Cindy Ross Barber, 1992. The design illustrates the range of interconnected issues addressed in the EIS.

Volume II

Appendices A-J

Appendices

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Appendix A

Reasons for Scheduling the Environmental Analysis of the Chasina Project Area

Reasons For Scheduling The Environmental Analysis Of The Chasina Project Area

KPC Long-term and Independent Timber Sale Contract Offerings

This appendix explains why the Chasina Project Area is scheduled for environmental analysis at this time.

Summary

Reasons for scheduling the Chasina Project Area at this time, for detailed consideration of timber harvest under the long-term timber sale contract between Ketchikan Pulp Company (KPC) and the Forest Service (Contract No. A10fs-1042) and/or under independent timber sales, may be summarized as follows:

1. The Chasina Project Area contains a sufficient amount of harvestable timber volume designated as LUD III or IV, and therefore appropriate for harvest under the Tongass Land Management Plan (TLMP). Available information indicates harvest of the amount of timber being considered for this project can occur consistent with TLMP standards and guidelines and other requirements for resource protection. Analysis also indicates harvest of the amount of timber being considered can occur consistent with the proposed TLMP Revision standards and guidelines and other resource protection requirements.

2. Areas with available timber both inside and outside the designated long-term contract sale area will be necessary for harvest in order to meet timber supply requirements under the contract. The Chasina Project Area is outside the designated sale area for the long-term contract. The Project Area is within the contingency area designated in the long-term contract. The contract requires the Forest Service to look first to the designated sale area for timber to meet the contract's supply requirements before offering timber outside that area.

3 Areas with available timber both within and outside the designated sale area will also be necessary to consider for harvest in order to seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle, pursuant to Section 101 of the Tongass Timber Reform Act (TTRA).

4 Effects on subsistence resources are projected to differ little according to which sequence these areas are subjected to harvest. Harvesting other areas on the Tongass National Forest with available timber is expected to have similar potential effects on resources, including those used for subsistence because of widespread distribution of subsistence use and other factors. Harvest of these other areas is foreseeable, in any case, over the forest planning horizon under either the existing or proposed revised TLMP.

5. Providing substantially less timber volume than required by the long-term contract with KPC and/or required to meet TLMP and TTRA Section 101 timber supply and employment objectives in order to avoid harvest in the Chasina Project Area or other project areas would not meet contract requirements and is otherwise not necessary or reasonable.

6. It is reasonable to schedule harvest in the Chasina Project Area at the present time rather than other areas in terms of previous harvest entry and access, level of controversy over subsistence and other effects, and the ability to complete the National Environmental Policy Act (NEPA)

process and make timber available to meet long-term contract requirements by the time it is reasonably necessary to do so. Other areas that are reasonable to consider for harvest in the near future are the subject of other project EISs that are currently ongoing or scheduled to begin soon.

More detail regarding the scheduling of the environmental analysis for the Chasina Poject Area is presented in this appendix in four subsections:

Ketchikan Pulp Company Contract Requirements
Southeast Alaska Timber Demand
Tongass Land Management Plan
Forest Plan Implementation

Ketchikan Pulp Company Contract Requirements

Contract Background

The current management situation consists of a valid contract between the Forest Service and Ketchikan Pulp Company (KPC), Contract Number A10fs-1042. Congress modified the contract in the Tongass Timber Reform Act (TTRA) of 1990. This contract bestows rights and obligations on both parties. One obligation for the Forest Service is to provide a supply of timber for harvest by KPC. The Forest Service must seek to provide the supply from a designated sale area within the Tongass National Forest before offering timber outside that area.

The "sale area" delineated on maps referenced in Section B0.3 of the contract occupies approximately the northern half of Prince of Wales Island, and the Gedney Pass, Traitors Cove, and Neets Bay areas on Revillagigedo Island. This is often referenced as the contract "primary sale area." Section B0.31 of the contract references an area approximately equivalent to the remainder of the Ketchikan Area of the Tongass National Forest as an area within which the Forest Service is authorized to make available additional timber for harvest under the contract, if the quantity of timber available for harvest within the primary sale area is not sufficient to meet contract supply obligations. This additional area is often referenced as the contract "contingency area."

The designated sale area, and as necessary the contingency area, remain the dominant sources for meeting KPC contract timber volume obligations. Congress in enacting the Tongass Timber Reform Act declined to modify the contract sale area, and by directing in section 301(e) of the statute that the Secretary of Agriculture report to Congress on the effects of eliminating the sale area, indicated an intent to reserve this decision to the legislature.

The Alaska Native Claims Settlement Act (ANCSA) and Alaska National Interest Lands Conservation Act (ANILCA) provide authority to offer timber from outside the Contract sale area or contingency area to substitute for areas selected by Native Corporations under ANSCA or designated by Congress as Wilderness in ANILCA that are within the sale area or contingency area. This authority can be used as needed to meet Contract volume requirements. Although statements have appeared in past EIS documents indicating this substitution had been completed, those statements were in error.

With regard to providing timber volume under the Contract, section B0.61 and section B0.62, read as follows:

> **B0.61 Timber Offering Schedule.** Each year prior to February 15, Forest Service after consultation with purchaser shall develop a tentative Offering schedule based upon the Tongass National Forest Land and Resource Management Plan, which shall display Offering Areas and timber

volumes proposed for harvest, and the expected NEPA process commencement and completion date for making any additional Offerings under the terms of this contract. To the extent authorized by law, Offering Areas may be identified for harvest outside the Sale Area, as needed to meet sale volume requirements. The tentative schedule shall list sufficient timber volume and schedule commencement of the NEPA process by Offering Area or Areas to provide Purchaser a Current Timber Supply sufficient for at least three years of operations hereunder or until the contract termination date, whichever occurs first, adjusting for the provisions of B0.63 and B6.36. In developing the schedule, Forest Service will consider the production requirements of Purchaser's manufacturing facilities.

B0.62 Specifying Offerings for Harvest. Based upon the tentative schedule and NEPA process, and consistent with timber sale planning, management requirements, and environmental assessment procedures for independent Tongass National Forest timber sales, Forest Service after consultation with Purchaser and completion of the NEPA process, shall specify any additional Offerings. Forest Service shall seek to specify sufficient Offerings to maintain a Current Timber Supply in all Offering Areas that totals at least three years of operations hereunder or until the contract termination date, whichever occurs first, and which meets the production requirements of Purchaser's manufacturing facilities.

As indicated above, section B0.62 states in part "Forest Service shall seek to specify sufficient Offerings to maintain a Current Timber Supply in all Offering Areas that total at least three years of operations hereunder or until the contract termination date, whichever comes first, and which meets the production requirements of Purchaser's manufacturing facilities." "Current Timber Supply" is defined in the contract generally as timber which the Forest Service has specified according to Forest Service planning procedures and for which the NEPA process has been completed. The Forest Service specifies timber by approving in writing a timber "Offering" under the contract, comparable to an independent timber sale. This approval in writing is represented by issuance of an "A Division" contract document for the Offering.

An EIS such as the Chasina Project Area EIS may cover one or more of these Offerings, which may be specified by the Forest Service and therefore added to the contract "Current Timber Supply" concurrently or sequentially after issuance of the Record of Decision (ROD) for the Project. Generally, layout on the ground of roads and harvest units selected in the ROD will be completed for each Offering prior to issuance of the "A Division" approval document.

Any long-term contract offerings implemented through this Project will help meet long-term contract timber supply needs. Section B0.63 of the contract allows KPC to reject timber offerings specified by the Forest Service. In that event, the contract provides for resale of the offering as part of the independent timber sale program. Thus, any long-term contract timber offering cleared through the NEPA process is subject to reoffer as an independent timber sale.

As for obligations of KPC, contract provisions require KPC, among other duties, to pay for and harvest timber, construct and operate a pulp manufacturing plant, and to recruit labor from residents of Southeast Alaska. KPC operates a pulp mill and a sawmill in Ketchikan and a sawmill in Metlakatla.

Current Timber Supply and Volume Needs

The maximum average annual rate per year at which KPC is generally allowed to harvest is 192.5 MMBF under long-term contract section B0.52. KPC's average harvest rate, obtained from contract records, during the five-year period from March 1, 1989 through February 28, 1994 was 185.4 MMBF per year. Using these figures for planning and projection purposes, a three year supply of timber for KPC's operations under the contract is estimated to range from 556.2 to 577.5 MMBF.

Current projections indicate that areas with available timber outside as well as within the designated sale area and contingency area will be necessary for harvest in order to meet contract supply requirements. As of July 1, 1996, KPC had a current timber supply of approximately 299 MMBF. The maximum volume of timber that can be provided to KPC from within the designated sale area in the remainder of fiscal year 1996 is about 3.5 MMBF. The maximum amount that can be provided to KPC from within the total contract area during 1997 is expected to be about 156 and during 1998 about 103.7 MMBF. Assuming the maximum annual average harvest rate of 192.5 MMBF, a timber supply of 110 MMBF would be available at the end of 1996, 75.5 MMBF at the end of 1997, and 0 MMBF at the end of 1998. These levels would fall well short of meeting the objective of specifying a three-year supply for operations under the contract, considering on-going harvest at either the maximum or historic rates noted above. KPC in 1996 or 1997 may harvest far less than the maximum or historical annual average harvest. But for purposes of planning and completing the NEPA process for timber sale projects, the Forest Service strives to be prepared for KPC to harvest at maximum levels authorized under the contract, to assure ability to meet contract supply needs.

There have been suggestions that layout and other actions could be expedited to increase the amounts available from the KPC sale area and contingency area through 1997. However the current assessment is that further expediting layout is not feasible, even with significant increased funding, while maintaining a reasonable assurance of quality work. The Forest Service has made efforts to accelerate the preparation of new offerings within the KPC sale area and contingency area. At present, about 591.7 MMBF in new timber projects are being planned within the KPC sale area and contingency area over the duration of the contract, beyond what is projected in the 1996 - 1998 figures presented above. However, because of the amount of time required to prepare new offerings in accordance with applicable laws, none of this volume is projected to be available until after fiscal year 1998. It remains to be seen how much of the volume in preparation will be cleared through the NEPA process and when it will be available.

Consequently, additional timber from outside the sale area and contingency area is projected to be needed in order to meet the three-year timber supply objective. Sale offerings currently scheduled, undergoing NEPA evaluation, or at some other stage in the preparation process are projected to be needed to help meet the long-term contract and independent sale program's three-year supply objectives. If any currently planned independent sales were converted to long-term contract offerings, equivalent volume currently planned for long term contract offerings would then need to be substituted as independent sale offerings in order to meet program objectives. The first offerings from the Chasina Project Area could be made available in 1998 to help meet either three-year supply objective.

The projected need to offer volume from outside both the primary sale area and contingency sale area is based on the fact that all remaining areas with available timber within the primary sale area and contingency area are expected to have timber offerings under the long-term contract by the year 2004. In making this projection, no more than local use levels of timber harvest under contract section B0.32 are projected in the primary sale area through 2004. Nevertheless, insufficient quantities of economically operable timber appear to remain available within the primary sale area and contingency area to satisfy long-term contract requirements through the year 2004. Volume estimates from the TLMP RSDEIS preferred alternative indicate that the total ASQ from the total long-term contract sale area would be 132 MMBF per year, with 119 MMBF per year of that volume considered economically viable.

The Chasina Project Area is outside the designated sale area for the long-term contract. The Project Area is within the contingency area designated in the contract. More information on why the Chasina Project Area was scheduled for environmental analysis at this time in addition to other areas is presented in the TLMP and Forest Plan Implementation sections below.

Why Providing Less Than The Needed Contract Supply Was Not Considered In Detail

Congress in section 301(e) of the TTRA also indicated its intent to reserve to itself the question of providing less than the contract supply obligation to KPC. The Forest Service can expect a large monetary claim from KPC for not meeting contract supply obligations, for which there is no current funding. To the contrary, recent federal appropriations legislation has dedicated additional money to providing additional timber offerings to KPC and other Tongass National Forest timber purchasers. Volume from independent timber sales or sources outside the Tongass National Forest do not fulfill long-term contract requirements. In any case, there is not sufficient projected volume from other sources to meet KPC supply requirements.

Logs from Native corporation lands cannot substantially meet the total needs of KPC. Owners of private timberland are able to sell their sawlogs on the export market for much higher prices than are being paid by local manufacturing. KPC is not prohibited under the contract from purchasing timber from Native corporations or other sources, subject to the requirement that, "at least three-fourths of the pulpwood requirements of the pulp manufacturing plant and other processing facilities operated in conjunction with this sale shall be cut from the areas covered by this agreement during the period prior to July 1, 1964, and during each 5-year operating period subsequent to that date." (contract section B0.53). There are no provisions in the Contract to offset such purchases by adjusting the contract timber supply. Harvest from Native corporation lands is decreasing, reducing potential pulp as well as sawlog availability from these lands (TLMP RSDEIS page 3-268).

Canadian timber has been mentioned in the past as a source of supply for Southeast mills. Southeast Alaska pulp mills have purchased pulp logs from British Columbia (BC) in the past. However, the political and economic situation in British Columbia has changed to decrease the likelihood of a substantial supply from this source. The June 1988 issue of British Columbia Lumberman, page W14, states that a substantial increase in demand for BC forest products is expected to decrease log exports. The Forest Minister stated: "Our main objective is to use BC timber to manufacture wood products in this province." It has been more recently stated that British Columbia is considering prohibiting log exports and is facing increased environmental pressures. KPC was able to purchase slightly under 10 MMBF of pulp logs from Canada in 1996 (Industry sources). However this purchase was considered a rare occurrence since it was due to a Canadian pulp mill being temporarily shut down for repairs and KPC was willing to pay relatively high prices for the pulp logs.

Southeast Alaska Timber Demand

Introduction.

Another reason for scheduling the environmental analysis of the Chasina Project Area is the overall demand for Tongass National Forest timber. This reason is separate but complementary to the long-term contract reasons. It is important to note that the Forest Service obligations under the long-term contract are clearly separate from the Forest Service obligations under Section 101 of TTRA. The discussion in this section does not define any of the Forest Service's obligations under the long-term contract discussed in the previous section. For example, the Alaska Forest Association (AFA) prediction that only 35% of all logs will be pulped does not affect long-term contract obligations.

In general, this section indicates that areas with available timber both inside and outside the KPC sale area will also be necessary to consider for harvest in order to seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle, pursuant to Section 101 of the Tongass Timber Reform Act.

Ketchikan Pulp Company.

The dissolving pulp mill operated by KPC reportedly requires 190 MMBF of pulpwood and/or chips annually to operate at its full annual capacity of 210,000 tons. This capacity exceeds the 525 tons per day capacity specified in the long-term contract in section B0.11. KPC also operates two sawmills with a reported combined log processing capacity of 110 MMBF annually. Chip by-products from the sawmills are used in pulp manufacture. The KPC pulp and sawmills are supplied by timber from Tongass independent timber sales as well as long-term contract volume.

Independent Mills.

At the present time, Viking Lumber (purchasers of the "Klawock mill") and Seaborne Lumber Company are the primary processors of timber from the independent sale program. At present, Seaborne Lumber Company is not currently operating. The mill is temporarily shut down, citing a lack of certainty about Tongass timber supply as one of the reasons. During this shutdown, a relocation to Prince of Wales Island is under consideration. This relocation may include restructuring of the mill to produce more value added finished products rather than rough lumber. The two sawmills are the largest independent mills operating in the region and have a reported combined processing capacity of 65 MMBF per year.

A third large sawmill is located in Wrangell and owned by Alaska Pulp Corporation (APC). Despite the record lumber prices at the time, the mill was closed indefinitely on November 30, 1994. Although APC has offered to sell the mill, at least one prospective purchaser has declined to purchase it, citing a lack of certainty about Tongass timber supply as one of the reasons.

Another market segment for independent timber sales includes four relatively small sawmills, with an estimated combined processing capacity of 30 MMBF per year. Finally, there are at least 10-12 other buyers who use very small amounts of wood in the manufacture of musical instruments, cedar shakes, shingles, and lumber using small, portable mills. The combined annual processing capacity of these smaller operations is estimated at 7 MMBF.

Description of Timber Consumption Scenarios

To develop an estimate of the volume of Tongass timber likely to be consumed by the timber industry in Southeast Alaska, this section analyzes: 1) the percent of installed wood processing capacity that is typically utilized, 2) the proportion of the wood supply that is typically sawn, and 3) the availability of supply from other sources, including Native corporations, the State of Alaska, and imports. The approach used to estimate each of these variables is discussed below.

Capacity Utilization.

For many years, the Forest Service has monitored installed capacity as reported by the firms operating sawmills and pulp mills in Southeast Alaska. These reports cover a twenty-four year span (1970-1994) in which the reported total annual mill capacity ranged from a high of 785 MMBF in 1980 to a low of 519 MMBF following the 1993 closure of the Sitka pulp mill. Processing capacity in sawmilling has been especially volatile over the years, following trends in market cycles. Sawmill capacity was reported at 199 MMBF in 1970, increased to a high of 435 MMBF in 1979, dropped back down to 240 MMBF in the mid-eighties, and increased again to 329 MMBF in 1994.

Because the bulk of Alaska's wood products have traditionally moved into export markets, trade statistics compiled by the U.S. Department of Commerce can be used to approximate the aggregate output of sawmills and pulp mills in Southeast Alaska for a corresponding number of years. Estimates such as these have already been generated by the Pacific Northwest Research Station for the period 1970-1991 (cite Brooks and Haynes, June 1994)

and recent Forest Service reports provided similar data for more recent years (cite 706(a) reports).

This data was used to calculate the average rate of capacity utilization for sawmills and pulp mills in Southeast Alaska over the last decade (1985-1994). This time period was chosen because it encompasses both extremes in the market cycle for lumber and pulp. It is also representative of industry operations following the period of restructuring that occurred in the early eighties, and is therefore more likely to reflect the operational considerations faced by the industry today. The available data indicate that over the last decade, sawmills in Southeast Alaska actually utilized an average of 54 percent of their reported log processing capacity. In contrast, an average of 86 percent of the reported pulp mill capacity was utilized over the same period of time.

Proportion of Wood Sawn.

It is important to recognize that sawmill consumption and capacity both refer only to the sawable portion of the timber supply. This in turn depends on end product selling values and the physical characteristics of the timber. The lower quality logs included in most timber sales are generally not sawn. The Alaska Forest Association (AFA) reports that the "best utilization of the Tongass fiber" is for 65 percent of the spruce and hemlock harvested to be sawn, with the remainder used in pulp manufacture (Source: FAX dated 10/26/95 -- Minimum Tongass National Forest Timber to Support Ketchikan Pulp Company). Thus, it is assumed in all the calculations for this report that the sawmills in the region process about 65 percent of all spruce and hemlock purchased. However, it is recognized that this percentage does fluctuate depending on market price swings for both lumber and pulp and other factors, and varies by mill (706(a) Supply and Demand Report, 1994; pages 2-4; 11-12; 15-17; 23-26; and 29-31).

Additional Sources of Supply.

This section repeats some of the same items presented under the KPC long-term contract discussion. They are being repeated here since other mill owners in Southeast Alaska face the same situation. Mill owners in Southeast Alaska have stated that their operations are dependent on the supply of timber provided from the Tongass National Forest. As is noted below, other sources of timber supplies are expected to be available only intermittently and in small quantities. For purposes of this analysis we assume that other supply sources will continue to make a relatively small contribution to total timber availability in the region each year, on the order of 20 MMBF of generally pulp quality material.

Although Canadian logs were obtained at a very low cost in the early 1980's, they typically do not serve as an economical supply for Alaska's mills. Canada's log exports in general have declined as cutbacks in timber supply were initiated as the Canadian government responded to environmental concerns. A subsequent rise in selling values for Canadian pulp logs has kept Alaska's import volumes at a near-zero level for the past several years. KPC was able to purchase slightly under 10 MMBF of Canadian pulp logs during 1996, however this was due primarily to the temporary shut down of a British Columbia pulp mill and KPC's willingness to pay high prices for the logs.

Since 1983, timber harvest on lands owned by Alaska Native corporations has exceeded harvest levels on the Tongass. However, in contrast to National Forest timber supplies, timber from Native lands is not subject to in-State processing requirements. Because export market prices greatly exceed those paid by local manufacturers, all but the lowest quality Native timber is sold overseas. Therefore, although some Native pulp logs are sold locally, this

timber is not well-suited for lumber production and generally does not meet the needs of the local sawmills.

Some 58,000 acres of State land are available for timber management in the Haines vicinity and another 3,000 acres near Yakutat. After several years of inactivity, the timber sale program was recently resumed on the Haines State Forest. The State's timber program in Southeast is relatively small, however, with an average annual harvest of 9 MMBF over the last five years.

Table 1. Timber Consumption Scenario #1 -- Reported Mill Capacity

	Capacity Log Consumption	*By-Product Chips*	*Pulp Logs*
Ketchikan Pulp Company			
Pulp Mill	190		
Ketchikan Sawmill	50	20	27
Annette Island Sawmill	60	24	32
Larger Sawmills			
Viking Lumber Chip Mills	30	12	16
Seaborne Lumber Company	35	14	19
APC Wrangell Mill	110	44	59
Smaller Sawmills			
Metlakatla Indian Tribe (MITE)	10	4	5
Pacific Rim Cedar	10	4	5
The Mill, Inc.	5	2	3
Jim Ensley	5	2	3
Misc Other Small Purchasers (This includes music wood, cedar salvage, and small portable sawmilling operations)	7	3	4

Summary 1a. Reported Capacity Consumption Scenario w/Wrangell Mill

Total Wood Consumption	512 MMBF
Sawn	322 MMBF
Pulped	190 MMBF

Total chip by-products generated	129 MMBF
Total pulp log harvest	173 MMBF
Pulp logs from Native Corps./imports	20 MMBF
	---
	322 MMBF

Subtotal spruce/hemlock = sawlog + pulp log = 322 MMBF + 173 MMBF = 495 MMBF
Cedar component (12% of harvest) = 68 MMBF
TOTAL TONGASS HARVEST = 495 MMBF spruce/hemlock + 68 MMBF cedar = 563 MMBF

Note: Under these conditions it appears excess pulp fiber would be available in Southeast Alaska, i.e. 129 MMBF in chip by-products + 173 MMBF pulp log plus 2- MMBF from other sources harvest - 190 MMBF = 132 MMBF in excess of that needed to run pulp mill at capacity. Under these conditions, a higher percentage of the wood supply would likely be sawn, and, depending on market conditions, surplus chips might also be exported.

Summary 1b. - Reported Capacity Consumption Scenario w/o Wrangell Mill

Assuming the Wrangell mill remained closed and all other mills operated at capacity, the summary numbers would be as follows:

Total Wood Consumption	402 MMBF
Sawn	212 MMBF
Pulped	190 MMBF

Total chip by-products generated	85 MMBF
Total pulp log harvest	114 MMBF
Pulp logs from Native Corps./imports	20 MMBF
	---
	219 MMBF

Subtotal spruce/hemlock = sawlog + pulplog = 212 MMBF + 114 MMBF = 326 MMBF
Cedar component (12% of harvest) = 44 MMBF
TOTAL TONGASS HARVEST = 326 MMBF spruce/hemlock + 44 MMBF cedar = 370 MMBF

Note: Most chip by-products and pulp logs harvested would be likely consumed by the KPC pulp mill under this scenario, leaving an estimated 29 MMBF of pulp material for export or other uses (85 + 114 + 20 - 190 = 29).

Table 2. Timber Consumption Scenario #2 - Reported Decade Average Capacity Utilization (KPC pulp mill 86 percent of capacity; sawmills 54 percent of capacity)

Ketchikan Pulp Company	Average Log Consumption	By-Product Chips	Pulp Logs
Pulp Mill	163		
Ketchikan Sawmill	27	11	15
Annette Island Sawmill	32	13	17
Larger Sawmills			
Viking Lumber/Chip Mill	16	6	9
Seaborne Lumber Company	19	8	10
APC Wrangell Mill	59	24	32
Small Sawmills			
Metlakatla Indian Tribe (MITE) 5		2	3
Pacific Rim Cedar	5	2	3
The Mill, Inc.	3	1	1
Jim Ensley	3	1	1
Misc Other Small Purchasers (This includes music wood, cedar salvage, and small portable sawmilling operations)	4	2	2

Summary 2a. Reported Decade Average Capacity Utilization Scenario w/ Wrangell Mill

Total Wood Consumption	337 MMBF
Sawn	174 MMBF
Pulped	163 MMBF
Total chip by-products generated	70 MMBF
Total pulp log harvest	94 MMBF
Pulp logs from Native Corps./imports	20 MMBF
	---
	184 MMBF

Subtotal spruce/hemlock = sawlog + pulp log = 174 MMBF + 94 MMBF = 268 MMBF
Cedar component (12% of harvest) = 36 MMBF
TOTAL TONGASS HARVEST = 268 MMBF spruce/hemlock + 36 MMBF cedar = 304 MMBF

Note: Under these conditions the fiber supply from the Tongass (and the by-products generated from it) would be exactly equal to the volume of wood consumed by the pulp mill and sawmills.

Summary 2b. Reported Decade Average Capacity Utilization Scenario w/o Wrangell Mill

Assuming the Wrangell mill remained closed and all other mills operated at the decadal average capacity utilization level, the summary numbers would be as follows:

Total Wood Consumption	278 MMBF
Sawn	115 MMBF
Pulped	163 MMBF
Total chip by-products generated	46 MMBF
Total pulp log harvest	62 MMBF
Pulp logs from Native Corps./imports	20 MMBF
	--------
	128 MMBF

Subtotal spruce/hemlock = sawlog + pulplog = 115 MMBF + 62 MMBF = 177 MMBF
Cedar component (12% of harvest) = 24 MMBF
TOTAL TONGASS HARVEST = 177 MMBF spruce/hemlock + 24 MMBF cedar
= 201 MMBF
35 MMBF
236 MMBF
*see note below

Note: Under this scenario, there would not be enough pulp logs and chips generated from operation of the sawmills to run the KPC pulp mill at 86 percent of capacity. Approximately 35 MMBF of additional timber sale volume would be required to meet the production assumptions in this scenario.

Tongass Timber Outlook

As of July 1996, a total of 110 MMBF of timber was under contract to independent sale operators and 299 MMBF was released and unharvested under the long-term contract with KPC.

An additional 275.3 MMBF of timber is currently projected to be offered as independent sales before the end of fiscal year 1998 and 376.2 MMBF is projected to be offered under the long-term contract.

Table 3. Projected Timber Sales FY 1996 Through FY 1998

Remaining 1996 Independent Sales

Rod'n Apple	Chatham Area	9.0 MMBF
Shamrock	Stikine Area	21.0 MMBF
	TOTAL FY 1996	30.0 MMBF

FY 1997 Independent Sales

Sentinal Island	Ketchikan Area	6.8 MMBF
Heceta Sawfly	Ketchikan Area	12 MMBF
District Small Sales	Ketchikan Area	6.8 MMBF
Poison Cove	Chatham Area	19.1 MMBF
Lisa Creek	Chatham Area	6.6 MMBF
Waterwold	Chatham Area	9.5 MMBF
Duffield	Chatham Area	20.5 MMBF
Indian River	Chatham Area	10 MMBF
King George	Stikine Area	20 MMBF
South Lindenburg	Stikine Area	22 MMBF
King George II	Stikine Area	2 MMBF
PRD Small Sales	Stikine Area	3 MMBF
	TOTAL FY 1997	138.3 MMBF

FY 1998 Independent Sales

Control Lake Misc.	Ketchikan Area	5 MMBF
District Small Sales	Ketchikan Area	4 MMBF
Nakwasina	Chatham Area	3 MMBF
Ushk Bay 1	Chatham Area	20 MMBF
Lindy	Stikine Area	30 MMBF
Fanshaw	Stikine Area	40 MMBF
King George III	Stikine Area	2 MMBF
PRD Small Sales	Stikine Area	3 MMBF
	TOTAL FY 1998	107 MMBF

Remaining 1996 KPC Contract Volume

Neka 1	Chatham Area	30.0 MMBF
	TOTAL FY 1996	30.0 MMBF

FY 1997 KPC Contract Volume

Naukati/Sarkar	Ketchikan Area	13.0 MMBF
Polk	Ketchikan Area	35.9 MMBF
Carroll	Ketchikan Area	20.0 MMBF
Control Lake 1	Ketchikan Area	30.0 MMBF
Control Lake 2	Ketchikan Area	30.0 MMBF
Lab Bay 1	Ketchikan Area	20.0 MMBF
Lab Bay 2	Ketchikan Area	20.0 MMBF
Neka 2	Chatham Area	15.0 MMBF
	TOTAL FY 1997	183.9 MMBF

FY 1998 KPC Contract Volume

12 Mile South	Ketchikan Area	9.1 MMBF
Teal	Ketchikan Area	23.7 MMBF
Bluff Lake	Ketchikan Area	20.0 MMBF
Control Lake 3	Ketchikan Area	30.0 MMBF
Control Lake 4	Ketchikan Area	30.0 MMBF
Port Houghton 1	Chatham Area	30.0 MMBF
Canal/Hoya	Stikine Area	20.0 MMBF
	TOTAL FY 1998	162.8 MMBF

Meeting Market Demand

Timber demand in Southeast Alaska can vary dramatically from year to year. The level of demand is dependent on complex interactions among factors that are difficult, if not impossible, for the industry or the Forest Service to predict with accuracy. Such factors include fluctuations in interest rates, housing starts, business cycles in the United States and overseas, changes in the value of the dollar with respect to foreign currencies, changes in import tariffs, and changes in export policies in other countries.

To be responsive to market demand, the Forest Service attempts to provide an opportunity for the industry as a whole to accumulate a supply of purchased but unharvested timber (i.e. volume under contract) equal to about three years of timber consumption. There are a number of reasons for allowing the accumulation of volume under contract. First, this allows the industry ample time to plan an orderly and systematic harvest schedule that meets all timing restrictions and permit requirements. Second, it allows the industry to better manage its financial resources and to secure financing on the basis of longer term timber supply. Third, it allows time for the necessary infrastructure (roads, log transfer facilities, and logging camps) to be put in place prior to timber harvest. Finally, an ample timber supply gives the industry more opportunity to sustain itself through market cycles. If demand for pulp or lumber in any year suddenly increases, producers will have access to enough timber to respond to the increase in demand without waiting for the Forest Service or the Congress to take action. Normally, the unharvested volume under contract will be drawn down during high points in the market when mills increase production, and built up when markets are poor and production declines. In response to changes observed in the volume under contract the Forest Service may consider adjusting its budget and timber program.

For purposes of this analysis, the same alternative measures of timber consumption described previously are used to approximate the three-year timber supply goal. The forest-wide average cedar component of 12 percent is added to the consumption estimates to put the three-year supply goal in terms of total timber sale volume. Again, under Scenario 1 it is assumed that reported mill capacity is the best approximation of short-term timber consumption. Using this assumption, a three-year timber supply equates to 1,689 MMBF (including cedar) (Table 4). Under Scenario 2, it is assumed that the reported average capacity utilization over the last decade is the best approximation of short term timber consumption. Using these assumptions, a three-year timber supply equates to 912 MMBF (including cedar) (Table 5). The effect of a permanent closure of the Wrangell mill is also examined for each alternative.

Table 4. Three-Year Supply-Scenario 1

	Capacity Consumption	*Cedar*	*3-Year Supply*
All mills including Wrangell	495 MMBF	68 MMBF	1689 MMBF
All mills excluding Wrangell	326 MMBF	44 MMBF	1110 MMBF

Table 5. Three-Year Supply-Scenario 2

	Decade Avg. Capacity Utilized	*Cedar*	*3-Year Supply*
All mills including Wrangell	268 MMBF	36 MMBF	912 MMBF
All mills excluding Wrangell	212 MMBF	24 MMBF	708 MMBF

Summary

It is reasonable to anticipate that the independent mills currently in operation and KPC will seek to purchase a minimum of 15 MMBF in timber sale volume from the Forest Service at the earliest possible opportunity in order to meet decadal average consumption rates through FY 1998 (Table 6). For all mills to operate at reported capacity throught FY 1998, an estimated 243 MMBF in timber sale volume would need to have been made available by the Forest Service in time for logging and road building activities to be completed early in the season. This figure should be viewed as an absolute minimum. It is highly unlikely that timber purchasers could obtain the necessary permits and meet all timing restrictions on road construction and harvest and still make use of the entire timber volume provided in a single season. Additional offerings would allow for these constraints as well as provide the opportunity for the mills to increase capacity utilization, accumulate volume under contract, and/or for the Wrangell sawmill and others to be reopened. Under the timber consumption scenarios described above, a minimum of 636 MMBF in additional (roaded and accessible) timber sale volume would be needed to satisfy the objective of providing a three-year supply of volume under contract. Thus, timber offerings of 855 MMBF by the end of FY 1998 would provide a supply of timber for KPC and the independent mills currently in operation while allowing for the accumulation of three years of volume under contract (based on the 10-year average rate of timber consumption) as a buffer to market volatility. The projected sale offerings for FY 1996-FY 1998 falls short of this mark by 203 MMBF.

Should the Wrangell mill reopen it is reasonable to anticipate that the independent mills currently in operation and KPC will seek to purchase a minimum of 127 MMBF of timber from the Forest Service at the earliest possible opportunity in order to meet projected consumption rates through FY 1998 (Table 7). For all mills to operate at reported capacity through FY 1998, an estimated 581 MMBF in timber sale volume would need to be made available by the Forest Service in time for logging and road building activities to be completed early in the season. Again, for reasons discussed above, this should be viewed as a conservative estimate. Under the timber consumption scenarios described above, a minimum of 804 MMBF in additional timber sale volume would be needed to satisfy the objective of providing a three-year supply of volume under contract to independent operators and KPC. Thus, timber offerings of 931 MMBF by the end of FY 1998 would provide a supply of timber for KPC and the independent mills currently in operation while allowing for the accumulation of three years of volume under contract (based on the 10-year average rate of timber consumption) as a buffer to market volatility. The sale schedule for FY 1996-98 falls short of this mark by 279 MMBF.

These projections do not include any additional volume that may become available in fiscal year 1997 or 1998 as a result of supplemental NEPA analysis required to lift the current AWARTA vs. Morrison court injunction, which affects about 175 MMBF of timber cleared in prior EIS's. It is not reasonable to project availability of any of this enjoined timber volume at least until after completion of the additional NEPA analysis. The projected sale offerings do include the Poison Cove sale that is the subject of a current court challenge and other sales offerings which may be subject to administrative appeals and litigation.

Table 6. Summary Excluding Wrangell Mill

	1/Volume Under Contract	24-mo. - Consump-tion	Likely Purchase (a)	3-year Supply (b)	(a+b)	Projected Offerings 96-97	Shortfall
Scenario 1:	220	652	432	978	1410	568.9	841.1
Scenario 2:	220	424	204	636	840	568.9	271.1

Note: Volumes are in MMBF (sawlog + utility). Volume under contract and scheduled sales do not include volume enjoined.

Table 7. Summary Including Wrangell Mill

	1/Volume Under Contract	24-mo. Consump-tion	Likely Purchase (a)	3-yr. Supply (b)	(a+b)	Projected Offerings 96-97	Shortfall
Scenario 1:	220	990	770	1485	2255	568.9	1686.1
Scenario 2:	220	536	316	804	1120	568.9	551.1

Tongass Land Management Plan

TLMP As Amended Winter 1985-86

Chapter 1 of this EIS includes an explanation of how this project relates to the Tongass Land Management Plan. That section describes the Land Use Designations (LUDs) which allocate land areas to different types of management. Chapter 1 also explains that these LUDs were assigned to land areas known as Value Comparison Units (VCUs), and that one or more contiguous VCUs were formed into Management Areas (MAs). This section also describes the management emphasis for the Management Areas likely to be affected by the Chasina Project.

The Tongass Land Management Plan, As Amended Winter 1985-1986, not only detailed Management Direction/Emphasis for each Management Area, it also scheduled specific acres for timber harvest over time. Table 8 displays acreage in each Management Area scheduled for harvest and how many of those acres have already been harvested.

Table 8
TLMP, As Amended Winter 1985-86, Suitable Scheduled Acres

Management Area	Acres Scheduled	Existing Harvest	Percent Harvested
CO3	4506	0	0
C07	2235	0	0
C10	18228	79	0
C13	25727	140	1
C14	19495	20	0
C15	4502	1821	40
C18	5664	460	8
C19	3502	820	23
C21	27139	0	0
C24	2190	0	0
C25	7365	0	0
C27	9807	681	7
C28	21399	1742	8
C29	14081	2940	21
C30	34200	9479	28
C31	22358	4220	19
C32	9800	1920	20
C34	19376	1937	10
C35	8745	1898	22
C36	10723	240	2
C37	48754	18937	39
C39	16301	439	36
C40	32374	9341	29
C41	22321	7864	35
C43	22453	3183	14
C44	25694	6187	24
C45	9096	80	1
C48	13650	0	0
C53	17708	1722	10
C55	3550	541	15
C58	33073	0	0
CHATHAM TOTAL	**516016**	**76691**	**15**

Table 8 (continued)
TLMP, As Amended Winter 1985-86, Suitable Scheduled Acres

Management Area	Acres Scheduled	Existing Harvest	Percent Harvested
S01	11954	60	1
S04	58630	20593	35
S07	13690	60	0
S08	11051	0	0
S09	29929	3356	11
S10	28642	3481	12
S11	32532	7308	22
S13	32767	3478	11
S16	21908	3903	18
S17	25782	8567	33
S18	5220	4266	82
S19	38901	13225	34
S20	15441	4014	26
S21	6436	2699	42
S22	3293	1081	33
S23	41368	5306	13
S25	30389	6601	22
S26	11766	180	2
S29	9020	5392	60
S31	4201	200	5
S33	8902	1780	20
S35	15022	5698	38
STIKINE TOTAL	**456844**	**101248**	**22**

Table 8 (continued)
TLMP, As Amended Winter 1985-86, Suitable Scheduled Acres

Management Area	Acres Scheduled	Existing Harvest	Percent Harvested
K01	30689	15444	50
K02	8112	317	4
K03	50689	22072	44
K04	20098	4559	23
K05	30331	15710	52
K07	67082	36078	54
K08	63864	15096	24
K09	45100	25009	55
K10	16714	6177	37
K11	30261	15083	50
K13	18655	20	0
K14	26872	16303	62
K15	20932	4759	23
K17	26377	16303	62
K18	29827	5805	19
K19	8816	60	1
K20	14201	702	5
K21	37920	1796	5
K22	27030	420	2
K24	30426	1704	6
K25	16048	0	0
K28	10864	0	0
K29	30968	0	0
K30	30885	841	3
K32	45414	16723	37
K34	171	20	12
K35	27446	10436	38
K39	14491	1199	8
K41	1664	603	36
K44	1306	0	0
KETCHIKAN TOTAL	**783253**	**219817**	**28**

The Allowable Sale Quantity (ASQ), calculated in TLMP and used in Congressional deliberations and decisions on ANILCA, assumed harvest in all LUD III and LUD IV VCUs, in compliance with the Southeast Area Guide, on a three entry, 100 year rotation. Some selected areas were scheduled for 4 entries in 120 years (LUD IV) and 6 entries in 200 years (LUD III) for visual considerations. A three entry rotation assumes the first entry will be made within 30 to 40 years. If areas are not entered, and the ASQ is harvested, other areas will have to receive a heavier entry, resulting in a pattern of high percentage first entries being established, and therefore creating conditions under which the three-entry rotation may not be achievable.

The TLMP as amended also scheduled as anticipated management outputs from the Tongass National Forest timber volume ranging from 300 million to 450 million annually (Tongass Land Management Plan Amended Winter 1985-86, page 4).

Revised Supplemental TLMP Revision Draft EIS (TLMP RSDEIS)

1. Sufficient Volume for Long Term Contract and Independent Timber Sale Program Needs in TLMP RSDEIS.

The TLMP RSDEIS Chapter 3 section on timber (pages 3-166, 167 and 168) provides the following summary statements in terms of the timber supply and the long-term timber sale programs.

> The total projected output varies from 0 MMBF in Alternative 1 to 282 MMBF in Alternative 7; the NIC I component varies from 0 to 252 MMBF. Alternatives 7 and 9 appear to have the capability of satisfying contractual planning needs. However, the remaining alternatives may jeopardize the Forest Service's ability to satisfy the contract planning needs from the contract area; volume would probably have to be obtained from elsewhere on the Forest... There appears to be sufficient additional volume from Chatham and Stikine in Alternatives 2, 3 6 and 8 to meet contractual planning needs. Alternatives 1, 4 and 5 still appear to jeopardize the Forest Service's ability to meet its contract planning needs.
>
> The available NIC I ASQ portions of Alternatives 2, 6, 7, 8 and 9 are sufficient to meet the 100 MMBF SBA goal. Alternative 3 could support a reduced SBA goal. Alternatives 1, 4 and 5 could not supply any timber beyond the KPC amount.

These statements indicate that timber supply exceeds the level which is required to satisfy the long-term timber sale contract in alternatives 2, 3, 6, 7, 8 and 9 with additional timber available for independent sales. The data to support these statements is displayed in Table 3-66 on page 3-167, Table 3-67 on page 3-167 and Table 3-68 on page 3-168 of TLMP RSDEIS.

Furthermore, TLMP RSDEIS estimates the number of acres of tentatively suitable lands that are scheduled to be harvested over the planning horizon for each Management Area. The following Table displays the results of that analysis for the preferred alternative. This table indicates that the scheduling of the Chasina Project Area and other project areas within and outside the KPC sale area and contingency area to meet contract volume requirements over the next several years is anticipated. In addition, this table shows that there are adequate suitable acres in these Management Areas, scheduled to be harvested, to provide that volume. It displays, for the preferred alternative, the scheduled suitable acres by Management Area. Table 9 is similar to Table 8 which showed the Management Areas scheduled for timber harvest. A comparison of these two tables indicates that the Management Areas identified as appropriate for timber harvest activities in the existing TLMP (as amended winter 1985-86) are also identified as appropriate in the preferred alternative of TLMP RSDEIS.

Table 9
TLMP RSDEIS Preferred Alternative Scheduled Acres (selected Management Areas)

Management Area	Acres Scheduled	Existing Harvest	Percent Harvested
C02	5101	500	10
CO3	4413	78	2
C07	1310	0	0
C10	8002	874	11
C13	22148	0	0
C14	23291	0	0
C15	4309	1509	37
C17	78	0	0
C18	888	0	0
C19	5621	1167	21
C27	2042	240	12
C28	10895	548	5
C29	10446	1795	17
C30	24442	5344	22
C31	17760	4250	24
C32	2320	500	22
C33	2711	78	3
C34	14441	999	7
C37	32456	10388	32
C39	3700	38	1
C40	10919	1493	14
C41	19036	3893	20
C43	3648	888	25
C44	12945	3546	27
C46	684	194	28
C48	680	0	0
C53	15275	7197	47
C54	1586	1022	64
CHATHAM TOTAL	**261047**	**46622**	**18**

Table 9 (continued)
TLMP RSDEIS Preferred Alternative Scheduled Acres (selected Management Areas)

Management Area	Acres Scheduled	Existing Harvest	Percent Harvested
S01	9124	0	0
S04	54806	18257	33
S07	9172	260	3
S08	3483	0	0
S09	22256	1650	7
S10	21861	3038	14
S11	27349	6786	25
S13	26820	2725	10
S14	218	0	0
S16	13036	2771	21
S17	20543	5663	28
S18	1918	1278	67
S19	32225	10052	31
S20	10694	1170	11
S21	3180	2300	72
S22	4020	884	22
S23	22779	3885	17
S24	1742	277	16
S25	22583	4648	21
S26	10743	100	1
S29	5426	2668	49
S31	2928	0	0
S32	304	140	46
S33	7215	1177	16
S35	11248	3455	31
STIKINE TOTAL	**345673**	**73184**	**21**

Table 9 (continued)
TLMP RSDEIS Preferred Alternative Scheduled Acres (selected Management Areas)

Management Area	Acres Scheduled	Existing Harvest	Percent Harvested
K01	16078	7414	46
K02	1844	872	47
K03	21030	11996	57
K04	5160	2459	48
K05	17681	11810	67
K07	40117	23194	58
K08	23347	9539	41
K09	23150	14113	61
K10	9199	3275	36
K11	14195	9793	69
K14	16935	1275	8
K15	11210	3082	27
K17	16358	8181	50
K18	18474	4803	26
K19	2204	0	0
K20	7385	1065	14
K21	8969	694	8
K22	2314	0	0
K24	6475	1101	17
K25	10239	0	0
K28	1947	0	0
K29	8871	152	2
K30	16571	919	6
K32	32776	7598	23
K34	1098	0	0
K35	18865	4657	25
K39	7316	458	6
K44	499	0	0
KTN. TOTAL	**360307**	**128450**	**36**

2. Cumulative Effects

The TLMP RSDEIS considers the cumulative effects for forest-wide acres managed for timber production for both the long-term and short-term timber sale programs. These effects are discussed at the end of their respective sections.

Analysis points to the need to schedule harvest in VCUs assigned management prescriptions which permit consideration of timber harvest, including the VCUs within the Chasina Project Area. These VCUs in the current Forest plan, and in the draft revised Forest Plan would be needed to help meet KPC Contract volume needs, and TLMP and TTRA timber supply objectives. The forest-wide cumulative effects analysis in the TLMP RSDEIS supports the conclusion that this harvest can be accomplished within existing and proposed revised TLMP standards and guidelines and other requirements for resource protection.

3. Subsistence

With the passage of the ANILCA, Congress recognized the importance of subsistence resources to rural residents of Alaska. In particular, prior to any disposition of public lands, an agency must first complete a subsistence effects evaluation, including consideration of the availability of other lands (ANILCA 810 (a)).

Based on a review of available harvest volumes for each VCU in the KPC Sale Area and Contingency Area, it appeared that in order to meet contract volume commitments, most of the LUD III and IV VCUs would need some level of harvest prior to the end of the KPC contract in 2004. In addition, some volumes from outside of the primary and contigency sale areas would also need to made available to KPC contractual obligations. A tentative offering schedule was developed and approved for implementation based on this analysis. In short, almost all LUD III and IV VCUs in the KPC Long-term Sale Area and Contingency Area as well as those outside the Sale Area would be scheduled for harvest by the year 2004, indicating a level of impact to all subsistence use areas. However, the most significant impacts on the subsistence resource habitat would not occur until 20 to 30 years after the timber harvest when the second growth canopy closes. When those impacts to subsistence resources are viewed from a reference point 20 years in the future, the particular importance of which areas are scheduled first during a 5-year period appears to be minor. In considering communities that may be most affected by any proposed timber harvest in the Chasina Project Area, Metlakatla, Hollis, Hydaburg, Saxman, and Ketchikan appear to have the strongest cultural and subsistence ties to the area. Each community has its own level of reliance on subsistence as well as its own level of reliance on the Chasina Project Area for supplying subsistence resources. The following information about each communities subsistence use is a summary of more detailed information provided in chapter 3 of the Chasina Project EIS.

Metlakatla Boat access areas adjacent to or in the immediate vicinity of Kitkun Bay and North Arm Moira are some of the subsistence use areas for the community.

Hollis Boat access areas adjacent to or within the immediate vicinity of Kitkun Bay and North Arm Moira Sound is the subsistence use area used on a limited basis by the community.

Saxman Boat access areas adjacent to or in the immediate vicinity of Kitkun Bay and North Arm Moira are some of the subsistence use areas for the community.

Hydaburg Boat access areas adjacent to or within the immediate vicinity of Cholmondeley Sound and North Arm Moira Sound are some of the subsistence use areas used on a limited

basis by this community. This area will be more accessible to the community with the construction of the logging roads through Sulzer Portage on native corportation land.

Ketchikan Boat access areas adjacent to or in the immediate vicinity of Kitkun Bay and North Moira Sound of the Project Area are some of the subsistence use areas for the community.

Craig Boat access areas adjacent to or within the immediate vicinity of Kitkun Bay and North Arm Moira Sound is the subsistence use area used on a limited basis by the community.

Kaasan Boat access areas adjacent to or in the immediate vicinity of Kitkun Bay and North Arm Moira are some of the subsistence use areas for the community.

Klawock Boat access areas adjacent to or within the immediate vicinity of Kitkun Bay and North Arm Moira Sound is the subsistence use area used on a limited basis by the community.

Thorne Bay Boat access areas adjacent to or within the immediate vicinity of Kitkun Bay and North Arm Moira Sound is the subsistence use area used on a limited basis by the community.

As a result of several considerations, including the availability of subsistence resources in undisturbed areas of South Prince of Wales Island, including LUD I and LUD II areas adjacent to the Project Area (such as the Nutkwa LUD II Area and the Prince of Wales Wilderness Area), the relative independence of most communities from subsistence resources in the Project Area, as well as analysis contained in the Tongass Land Management Plan RSDEIS, the Forest Service determined to schedule an environmental analysis of the Chasina area. Other projects including Sea Level, North Revilla, Port Stewart, Vixen Inlet, Central Prince of Wales, Lab Bay, Ratz Harbor, Heceta Island, and Upper Carroll are being implemented, or, will undergo environmental analysis within the next 3 to 5 years.

Extensive forestwide cumulative effect analysis has been included in the TLMP RSDEIS (TLMP SDEIS pages 3-628 through 3-765 and TLMP RSDEIS pages 3-328 through 3-441). That analysis, and the tables of data shown in appendix K of TLMP SDEIS and the maps shown in appendix C of the TLMP RSDEIS are incorporated by reference into this document. The data in Appendix K and L indicates subsistence hunting of deer and other uses in virtually every area of the Tongass with substantial quantities of harvestable timber. The following information is extracted directly out of the Tongass Land Management Plan Revision, Supplement to the Draft Environmental Impact Statement, pages 3-762 and 3-763:

> In conducting the subsistence evaluation it is determined that, in combination with other past present and reasonably foreseeable future actions, none of the alternatives would pose a significant possibility of significant restriction for salmon, other finfish, marine mammals, invertebrates, plants, mountain goat, moose, waterfowl, sea birds, or other small game. Together these resources account for an average of 79 percent of the total harvest of subsistence resources (Kruse and Muth, 1990).
>
> In considering the impacts of future actions that may take place under the proposed alternatives on deer, two types of analysis was conducted. Potential effects were first determined for those WAAs where residents have successfully harvested deer, then for those WAAs where residents have ever gone to harvest deer. Both 10 percent and 20 percent harvest levels of the deer population were used.
>
> Considering only those WAAs where residents successfully harvested deer and assuming a harvest level of 10 percent of the population, there would be sufficient deer in all alternatives for the next 50 years to meet all subsistence needs for all

communities except Gustavus, Hoonah, Kake, Pelican, Sitka, and Yakutat (appendix K). For these communities, there would be insufficient habitat capability to support harvest by all subsistence users (regardless of the community of orgin). However, at 20 percent of the population, all subsistence needs for these communities would be met by all alternatives for the next 50 years (appendix K).

If instead of considering only those WAAs in which hunters were successful, we consider all WAAs ever hunted by community residents, then there would be sufficient deer habitat capability to support all subsistence hunters in the WAAs used for hunting by all subsistence communities except for Pelican and Gustavus. If instead of assuming a 10 percent harvest level, a 20 percent harvest level is used, there would be sufficient habitat capability to support all subsistence harvest in all WAAs used for hunting by all subsistence communities.

As a result of the analysis of the impacts of projects that would be permissible under each of the alternatives considered for adoption in the Forest Plan, it has been determined that all of the alternatives, if all permissible projects were fully implemented, have the potential to impact subsistence uses of deer, brown bear, and furbearers (specifically martens) due to potential effects of projects on abundance/distribution, and competition.

The analysis shown in chapter 3 of this Project EIS is supported by the analysis shown above in the TLMP RSDEIS. The conclusion stated above, "it has been determined that all of the alternatives, if all of the permissible projects were fully implemented, have the potential to impact subsistence uses of deer. . .", supports the conclusion that any environmental analysis area within the Tongass would have a similar chance of having a significant possibility of a significant restriction on subsistence resources for Sitka Black-tailed deer, and other mammals.

The analysis for ANILCA section 810 are shown in the Subsistence section of chapter 3, in this EIS. The determinations made from the ANILCA section 810 analysis and findings will be a part of the Record of Decision for this project.

Forest Plan Implementation

Review of Available Volume

A review was conducted of each Managment Area for available volume. This analysis was based on computer inventories and Allowable Sale Quantity (ASQ) calculations from TLMP Draft Revision (1996).

All areas allocated to LUD III or IV under the current TLMP, as amended, and all areas available for timber harvest under the revised TLMP can be expected to entered for substantial timber harvest sometime in the future if the plan is to be fully implemented. The review used the following guidelines to identify likely areas to schedule for environmental analysis in the near future:

(1) Evaluate by area the total available volume within the suitable land base.

(2) Identify a tentative ten year sale schedule which addresses volume to be offered.

(3) Prepare a schedule of environmental analysis areas which shows how the Tongass will proceed through the end of ten year sale schedule.

The results of the first step by the working group analysis are presented in table 10. The results of this volume review, further supported by TLMP revision information, provided the basis for scheduling the next series of environmental analyses.

Table 10
Available Volume By Project

Timber Project Location and Projected Volume	Projected Volume	Tent. Suitable Acres	Previous Harvest Acres	Projected Project Acres
Chatham Area				
89 SEIS Analysis Area 2 VCUs 193;198 200;201;202;222;223		15,998	2,583 (16.2%)	1,305 (8.2%)
Kelp Bay EIS VCUs 291-294; 296-298; 314-315	117MMBF	22,584	4,781 (21.2%)	4,238 (18.8%)
Southeast Chichagof EIS MA 29;33;34; 36;37;37a & VCU 227-247	130MMBF	58,054	13,260 (22.8%)	3,765 (6.5%)
Ushk Bay EIS VCUs 279-281	67MMBF	5,070	38 (0.8%)	2,166 (42.7%)
Eight Fathom EIS VCUs 193-198; 200-202	130MMBF	16,645	1,806 (10.9%)	3,498 (21.0%)
Northwest Baranof EIS VCUs 287-292; 299-302	66MMBF	17,936	3,307 (18.4%)	2,500 (13.9%)
Port Houghton EIS VCUs 79-89	93MMBF	32,415	0 (0.0%)	3,100 (9.6%)
Indian River EIS VCUs 220-222	20MMBF	5,688	1,277 (22.5%)	660 (11.6%)
Whitestone EIS VCUs 205; 207-211	30MMBF	15,241	3,476 (22.8%)	900 (5.9%)
Moore Mountains EIS VCUs 227-246	67MMBF	48,118	11,465 (23.8%)	2,010 (4.2%)
Kennel Creek EIS VCUs 215-218	36MMBF	19,178	4,604 (24.0%)	1,170 (6.1%)
Windham EIS VCUs 68-70; 72-74	50MMBF	16,236	0 (0.0%)	1,500 (9.2%)
W.Baranof/Kruzof EIS VCUs 287; 299; 300;301;312;313;318-324	41MMBF	8,084	1,374 (17.0%)	1,400 17.3%)
Upper Tenakee EIS VCUs 202; 224-226	33MMBF	5,801	1,018 (17.6%)	990 (17.1%)
Neka Heli EIS VCUs 193-198; 200-201	37MMBF	12,973	788 (6.1%)	1,110 (8.6%)

Port Houghton II EIS VCUs 79-84	34MMBF	23,291	0 (0.0%)	1,020 (4.4%)
Couverden/Mansfield VCUs 116-123; 125-132	24MMBF	5,640	1,167 (20.7%)	720 (12.8%)
Stikine Aea				
North & East Kuiu EIS VCUs 398-402; 416-421	120MMBF	77,042	19,907 (25.8%)	5,203 (6.8%)
Bohemia EIS VCUs 424; 442	40MMBF	7,571	400 (5.3%)	1,381 (18.2%)
Campbell EIS VCU 510	8MMBF	830	0 (0.0%)	390 (47.0%)
Shamrock EIS VCUs 429;436;438	44MMBF	17,895	358 (2.0%)	1,500 (8.4%)
King George EIS VCU 462	27MMBF	3,611	240 (6.7%)	750 (20.8%)
Lindenberg EIS VCU 437	46MMBF	7,794	2,126 (27.3%)	1,560 (20.0%)
Canal/Hoya EIS VCUs 520-521	20MMBF	2,098	0 (0.0%)	600 (28.6%)
S. Zarembo EIS VCUs 458-459	20MMBF	15,718	3,854 (24.5%)	660 (4.2%)
S33 EIS VCUs 525-526	22MMBF	3,296	177 (5.4%)	700 (21.2%)
Scott Peak EIS VCUs 443;444;446	20MMBF	14,290	2,638 (18.5%)	600 (4.2%)
Mitkof Sales EIS VCUs 449-450	30MMBF	7,463	2,650 (35.5%)	1,000 (13.4%)
Crystal River EIS VCUs 486;487;489	16MMBF	10,666	3,315 (31.1%)	550 (5.2%)
Etolin EIS VCUs 462-469	50MMBF	21,876	3,885 (17.8%)	1,700 (7.8%)
Mad Critter EIS VCUs 501;502;504	25MMBF	10,723	100 (0.9%)	833 (7.8%)
Woronofski EIS VCU 461	11MMBF	4,006	820 (20.5%)	330 (8.2%)

Cape Fanshaw EIS VCUs 85-89	37MMBF	9,124	0 (0.0%)	1,200 (13.2%)
South Kupreanof EIS VCUs 430-434	28MMBF	10,694	1,170 (10.9%)	840 (7.9%)
Zarembo EIS VCUs 458-459	20MMBF	15,718	3,854 (24.5%)	600 (3.8%)
Woewodski EIS VCU 448	11MMBF	4,006	820 (20.5%)	330 (8.2%)
North Kupreanof EIS VCUs 424;443	22MMBF	9,438	799 (8.5%)	660 (7.0%)
Wrangell EIS VCUs 476-480;505	11MMBF	20,845	4,488 (21.5%)	370 (1.8%)
Ketchikan Area				
Central Prince of Wales EIS VCUs 557; 577;579-590;598-601.1;549.2-554; 571-574	267MMBF	87,529	47,862 (54.7%)	7,870 (9.0%)
North Revilla EIS VCUs 732;733;735-74	200MMBF	26,861	7,051 (26.3%)	6,485 (24.1%)
Polk Inlet EIS VCUs 610-613; 618-622 624;674;675	125MMBF	34,832	12,984 (37.3%)	4,116 (11.8%)
Lab Bay EIS VCUs 527-540;551	40MMBF	34,736	17,361 (50.0%)	1,400 (4.0%)
Control Lake EIS VCUs 574-578; 591-597.2	140MMBF	37,358	11,335 (30.3%)	4,700 (12.6%)
Upper Carroll EIS VCUs 737;744;746	40MMBF	10,076	2,960 (29.4%)	1,400 (13.9%)
Vixin Inlet EIS VCUs 708-710;718; 720;721	40MMBF	7,094	152 (2.1%)	1,400 (19.7%)
Ratz EIS VCUs 572; 579-585	10MMBF	23,150	14,113 (61.0%)	300 (1.3%)
Tuxekan EIS VCUs 554.2;556;557;560; 571	15MMBF	20,472	12,515 (61.1%)	500 (2.3%)
Chasina EIS VCUs 677-681	40MMBF	6,475	1,101 (17.0%)	1,400 (21.6%)
Sea Level EIS VCUs 746;753;755-757; 759	20MMBF	18,845	4,657 (24.7%)	600 (3.2%)
Port Stewart EIS VCUs 713-717;719;	35MMBF	16,571	919	1,200

722;723			(5.6%)	(7.2%)
Moira EIS VCUs 694;695;699; 700-704	40MMBF	10,293	0	1,400 (13.6%)
Chomley EIS VCUs 691-693	60MMBF	7,501	0	2,000 (26.7%)
South Prince of Wales EIS VCUs 694; 695;699; 700-704	36MMBF	7,565	0	1,200 (15.9%)
North Prince of Wales EIS MA K01;K03 K07;K08	90MMBF	98,812	51,157 (51.8%)	3,000 (3.0%)
Luck Lake EIS MA K08;K09	60MMBF	42,777	21,416 (50.1%)	2,000 (4.7%)
Lower Carroll EIS VCU 744	40MMBF	9,393	1,642 (17.5%)	1,400 (14.9%)
Cleveland EIS MA K29; K30	90MMBF	25,442	919 (3.6%)	3,000 (11.8%)
Dall Island EIS MA K22	25MMBF	2,314	0	750 (32.4%)
Sukkwan EIS MA K21	30MMBF	8,969	694 (7.7%)	1,000 (11.2%)
S. Revilla EIS VCUs 743;747;748	20MMBF	6,891	439 (6.4%)	600 (8.7%)
K-15 EIS MA K15	15MMBF	10,102	3,003 (29.7%)	500 (5.0%)
K-32 EIS MA K15	10MMBF	26,861	7,051 (26.3%)	350 (1.3%)

Analysis Area Reviews

For each area identified as having sufficient volume available to consider for further environmental analysis at this time, a review was conducted to decide which areas to schedule first, considering the current TLMP and proposed revised TLMP schedule, and other resource factors such as amount of past harvesting, log transfer facilities (LTF's) required, amount of road systems in place, amount of additional roads required, if in long term sale contract sale area and wildlife and recreation values. The results of this review appear below:

Table 11
Available Volume By Project

Timber NEPA Projects, Location, and Projected Offerings	Projected NEPA Process Dates	Projected Volume MMBF
Chatham Area		
89 SEIS Analysis Area 2 VCUs 193;198; 200;201;202;222;223	11/89 ROD;	
Kelp Bay EIS VCUs 291-294; 296-298; 314-315	3/1/90 NOI;2/92 ROD;	117
Southeast Chichagof EIS MA 29;33;34; 36;37;37a & VCU 227-247	5/2/90 NOI;8/92 ROD;	130
Ushk Bay EIS VCUs 279-281	9/94 ROD;	67
Eight Fathom EIS VCUs 193-198; 200-202	5/22/93 NOI 7/31/95 DEIS;3/96 ROD;	130
Northwest Baranof EIS VCUs 287-292; 299-302	6/1/2/93 NOI 7/21/95 DEIS;3/96 ROD;	66
Port Houghton EIS VCUs 79-89	9/12/94 NOI; 10/95 DEIS; 4/96 ROD;	93
Indian River EIS VCUs 220-222	1/96 NOI; 6/96 DEIS; 12/96 ROD;	20
Whitestone EIS VCUs 205; 207-211	'96 NOI; '96 DEIS; 5/97 ROD;	30
Moore Mountains EIS VCUs 227-246	'97 NOI; '98 DEIS; 1/99 ROD;	67
Kennel Creek EIS VCUs 215-218	'97 NOI; '98 DEIS; 5/99 ROD;	36
Windham EIS VCUs 68-70; 72-74	'98 NOI; '99 DEIS; 01/00 ROD;	50
W.Baranof/Kruzof EIS VCUs 287; 299; 300;301;312;313;318-324	'99 NOI; '00 DEIS; 01/01 ROD;	41
Upper Tenakee EIS VCUs 202; 224-226	'01 NOI; '02 DEIS; 01/03 ROD;	33
Neka Heli EIS VCUs 193-198; 200-201	'01 NOI; '02 DEIS; 05/03 ROD;	37

	'02 NOI;	
Port Houghton II EIS VCUs 79-84	'03 DEIS; 05/04 ROD;	34
Couverden/Mansfield VCUs 116-123; 125-132	'03 NOI; '04 DEIS; 01/05 ROD;	24
Stikine Area		
North & East Kuiu EIS VCUs 398-402; 416-421	6/90 NOI; 1/20/93 ROD;	120
Bohemia EIS VCUs 424; 442	4/95 ROD;	40
Campbell EIS VCU 510	9/29/93 ROD;	8
Shamrock EIS VCUs 429;436;438	5/96 ROD;	44
King George EIS VCU 462	12/93 NOI; 5/96 ROD;	27
Lindenberg EIS VCU 437	7/93 NOI; 4/96 ROD;	46
Canal/Hoya EIS VCUs 520-521	'96 NOI; 9/96 DEIS; 12/96 ROD;	20
Houghton/Fanshaw EIS (NEPA shown on Pt. Houghton EIS)		
S. Zarembo EIS VCUs 458-459	'96 NOI; '97 DEIS; 10/98 ROD;	20
S33 EIS VCUs 525-526	'96 NOI; '97 DEIS; 10/98 ROD;	22
Scott Peak EIS VCUs 443;444;446	'96 NOI; '97 DEIS; 10/97 ROD;	20
Mitkof Sales EIS VCUs 449-450	'96 NOI; '97 DEIS; 10/97 ROD;	30
Crystal River EIS VCUs 486;487;489	'96 NOI; '97 DEIS; 10/98 ROD;	16
Etolin EIS VCUs 462-469	'96 NOI; '97 DEIS; 10/98 ROD;	50
Mad Critter EIS VCUs 501;502;504	'96 NOI; '97 DEIS; 10/98 ROD;	35
Woronofski EIS VCU 461	'97 NOI; '98 DEIS; 10/99 ROD;	10
Cape Fanshaw EIS VCUs 85-89	'97 NOI; '98 DEIS; 10/99 ROD;	37
South Kupreanof EIS VCUs 430-434	'98 NOI; '99 DEIS; 10/00 ROD;	28
Zarembo EIS VCUs 458-459	'99 NOI; '00 DEIS; 10/01 ROD;	20
Woewodski EIS VCU 448	'00 NOI; '01 DEIS; 10/02 ROD;	11
	'00 NOI;	

North Kupreanof EIS VCUs 424;443	'01 DEIS; 10/02 ROD;	22
Wrangell EIS VCUs 476-480;505	'00 NOI; '01 DEIS; 10/02 ROD;	20
Ketchikan Area		
Central Prince of Wales EIS VCUs 557; 571-574; 577;579-590;598-601.1; 549.2-554	8/91 NOI; 7/93 ROD;	267
North Revilla EIS VCUs 732;733;735-740	4/91 NOI; 8/93 ROD;	200
Polk Inlet EIS VCUs 610-613; 618-622; 624;674;675	9/91 NOI; 3/95 ROD;	125
Lab Bay EIS VCUs 527-540;551	9/92 NOI; 7/95 DEIS; 8/96 ROD;	40
Control Lake EIS VCUs 574-578; 591-597.2	10/93 NOI; 9/95 DEIS; 6/96 ROD;	140
Upper Carroll EIS VCUs 737;744;746	6/94 NOI; 9/95 DEIS; 6/96 ROD;	40
Vixin Inlet EIS VCUs 708-710;718; 720;721	5/97 NOI; 12/97 DEIS; 12/98 ROD;	40
Ratz EIS VCUs 572; 579-585	5/97 NOI; 12/97 DEIS; 12/98 ROD;	10
Tuxekan EIS VCUs 554.2;556;557;560; 571	5/97 NOI; 12/97 DEIS; 12/98 ROD;	15
Chasina EIS VCUs 677-681	11/95 NOI; 7/96 DEIS; 4/97 ROD;	40
Sea Level EIS VCUs 746;753;755-757; 759	5/96 NOI; 11/97 DEIS; 12/98 ROD;	20
Port Stewart EIS VCUs 713-717;719; 722;723	4/97 NOI; 12/97 DEIS; 12/98 ROD;	35
Moira EIS VCUs 694;695;699; 700-704	'98 NOI; '99 DEIS; '00 ROD;	40
Chomley EIS VCUs 691-693	'98 NOI; '99 DEIS; '00 ROD;	60
South Prince of Wales EIS VCUs 694; 695;699; 700-704	'99 NOI; '00 DEIS; '01 ROD;	36
North Prince of Wales EIS MA K01;K03; K07;K08	'99 NOI; '00 DEIS; '01 ROD;	90
Luck Lake EIS MA K08;K09	'99 NOI; '00 DEIS; '01 ROD;	60

Lower Carroll EIS VCU 744	'00 NOI; '01 DEIS; '02 ROD;	40
Cleveland EIS MA K29; K30	'01 NOI; '02 DEIS; '03 ROD;	90
Dall Island EIS MA K22	'02 NOI; '03 DEIS; '04 ROD;	25
Sukkwan EIS MA K21	'02 NOI; '03 DEIS; '04 ROD;	30
S. Revilla EIS VCUs 743;747;748	'02 NOI; '03 DEIS; '04 ROD;	20
K-15 EIS MA K15	'02 NOI; '03 DEIS; '04 ROD;	15
K-32 EIS MA K15	'02 NOI; '03 DEIS; '04 ROD;	10

Results of Analysis

Upon completion of the above analysis, several project areas were identified and scheduled for environmental analysis first. Those projects were initiated which had a high priority. In addition to project area's relative ability to provide timber, other factors considered in scheduling the Chasina Project for environmental analysis at this time with an associated, projected approximate timber volume included: (1) this harvest level is consistent with the sale schedule in the TLMP (1979a, as amended); (2) sufficient volume has been determined to be available in the project area; (3) there is a limited road network in place; (4) the number and location of Log Transfer Facilities (LTF's) is sufficient to handle this volume of timber within a three-year time frame; (5) there are existing logging camps within the area to handle this volume; and (6) the current Forest Plan (TLMP 1979a, as amended) provides for harvest in this project area. Harvest in the project area is also consistent with proposed land allocation in the preferred alternative in TLMP Revision RSDEIS.

Substantial changes in timber demand or other circumstances could affect the rate at which various areas proceed through the NEPA process or the timing of actual timber sale offerings, but are not expected to change the sequence for initiating and completing the NEPA process for various areas. Time periods of relatively low market demand provide an opportunity to increase available timber supply in anticipation of cyclical higher demand periods. All areas in which commercial timber harvest is authorized under the existing or revised TLMP are expected to receive some level of timber harvest at some time if the Forest Plan is to be fully implemented. Total environmental impacts viewed in the long term are not expected to differ substantially depending upon the order in which different areas are entered. The "No-Action" Alternative of not proceeding with further harvest at the present is considered in detail in each timber sale project NEPA process. But generally, projects farthest along in the NEPA process are the most efficient and logical to consider for implementation first in order to meet timber supply, timber sale program, and Forest Plan objectives.

Appendix B

Harvest Units Over 100 Acres

Appendix B
Harvest Units Over 100 Acres in Size
By Alternative

NFMA regulations provide that 100 acres is the maximum size of created openings to be allowed for the hemlock-Sitka spruce forest type of coastal Alaska, unless excepted under specific conditions. The Alaska Regional Guide (page 3-20) provides---

> Recognizing that harvest units must be designed to accomplish management goals, created openings may be larger where larger units will produce a more desirable contribution of benefits. Factors to be considered to determine when a larger size may be permitted are:
>
> 1. Topography
> 2. Relationship of units to other natural or artificial openings and proximity of units
> 3. Coordination and consistency with adjacent management areas
> 4. Effect on water quality and quantity
> 5 Visual absorption capacity
> 6 Effect on wildlife and fish habitat
> 7. Regeneration requirements for desirable tree species, based upon latest research
> 8. Transportation and harvesting system requirements
> 9. Natural and biological hazards to the survival of residual trees and surrounding stands
> 10. Relative total costs of preparation, logging, and administration of harvest cuts
>
> Where it is determined by the interdisciplinary team that exceptions to the size limitation are warranted, the actual size limitation of openings may be up 100 percent greater for factor 9 and up to 50 percent greater for all other factors with the approval of the Forest Supervisor.
>
> Exceptions to the 100 acre size limit in excess of 50 percent greater (100 percent greater for factor 9) are permitted on an individual timber sale basis after 60 days public notice, and review and approval by the Regional Forester.

The following table display the units by alternative which exceed 100 acres in size. The reasons for exceeeding the size limits are also displayed.

Units Over 100 Acres in Size

HARVEST UNIT#	ACRES	REASON	ALTERNATIVE NUMBER 2	3	4	5	6
* 679-425	110	1,8,10			4		6
681-368	110	1,8,10	2	3	4		6
Over 100 Acres by Alternative			1	1	2	0	2

* Because of cumulative watershed impact concerns, this unit will be decreased in size between draft and final EIS.

Appendix C

Riparian Area Prescriptions

RIPARIAN AREA PRESCRIPTIONS

RP LUDs

The Riparian Area Land Use Designation (RP) is applied where more development-oriented riparian management would otherwise normally occur. At a minimum, the land area encompassed by this designation includes: 1) the riparian area required to meet the National Forest Management Act's implementing regulations for fish habitat and water quality; and, 2) the land area in which the commercial timber harvest restrictions of the Tongass Timber Reform Act (P.L. 101-931) are applied. Risks of effects to riparian resources are reduced by extending the Riparian Area Land Use Designation to beyond the area required by law.

Goals

To maintain riparian habitat for fish and other riparian-associated species and resources.

To meet the requirements of the National Forest Management Act and the Tongass Timber Reform Act for the protection of fish habitat and/or water quality.

Objectives

To emphasize the maintenance and improvement of fish habitat and populations by integrating aquatic and terrestrial ecosystems management.

Manage the habitat for riparian-associated wildlife species in Class I stream and lake areas to achieve old-growth characteristics.

Prohibit commercial timber harvest within 100 feet of either side of Class I streams, and within 100 feet of those Class II streams which flow directly into Class I streams. Allow timber harvest in other areas where it does not conflict with the maintenance or improvement of riparian-associated resources.

Objectives for fish habitat management:

- Maintain or improve fish habitat capability;
- Maintain natural stream bank and stream channel processes;
- Maintain natural and beneficial quantities of large woody debris over the short- and long-term;
- Maintain water quality to provide for fish production;
- Maintain optimum water temperatures for salmonids;
- Maintain or improve primary or secondary stream biological production in second-growth forests;
- Maintain fish passage through stream crossing structures.

Accommodate recreation facilities and uses associated with water-related activities which avoid adverse effects on water quality and riparian shorelines.

Desired Future Condition

Riparian areas throughout the forest provide high-quality habitat for fish and riparian-associated wildlife species. A wide variety of vegetative conditions and

types are present, benefiting a variety of species; also provided are reserve trees for wildlife, large trees for brown bear bedding areas, and associated waterfowl habitats. The areas also provide wildlife travel corridors.

Timber Harvest Prescription

The following tables provide the standards and guidelines for timber harvest activities. Distances are in slope distance measured from the ordinary high water mark (see glossary). Distances shown are for windfirm leave strips; greater distance may be required to achieve reasonable assurance that windthrow as the result of adjacent harvest activity will not occur within the windfirm distance. To design windfirm leave strips, consider conditions such as soils, local wind patterns, tree height and size, and other site-specific factors. Forest-wide and Land Use Designation-wide standards and guidelines apply for each channel process group.

Harvest Definitions

"no commercial timber harvest" - A standard that means commercial timber harvest shall be prohibited (Tongass Timber Reform Act of 1990)).

"no programmed commercial timber harvest" - A guideline and means that no timber harvest will be scheduled, but that unprogrammed commercial timber harvest could be allowed. Among other reasons, unprogrammed commercial timber harvest may include timber sold as part of a salvage sale, for insect and disease abatement purposes, and for specialty wood products.)

Flood Plain Process Group
(Channel types FP1, FP2, FP3, FP4, FP5)

Stream Class

	I
Objectives	- Maintain or improve aquatic biological productivity - Assure the protection of riparian habitat - Allow no measurable reduction in short habitat capability except when change is a result of natural processes - Restore stream and/or watershed condition where habitat capability has been reduced from the natural capability - Maintain/manage old-growth characteristic habitat for riparian-associated wildlife species - Maintain long-term supplies of large woody debris sources within the process group - Allow no activities which may cause floodplain destabilization
Harvest Control	- Allow no commercial timber harvest within 100 feet in width on each side of all channel types - Allow single tree selection harvest within 100 to 200 feet in width on each side of FP3 channel types not associated with other channel types - Allow no programmed commercial timber harvest within 100 to 200 feet in width on each side for remainder of channel types - Consider all harvest methods, on a case-by-case basis, in the riparian area beyond 200 feet if the riparian area is greater than 200 feet
Harvest Rate	- Beyond 100 feet from the stream, strive to maintain 90% of the normal basal area with trees 16"+ dbh within areas with no programmed commercial timber harvest.
Salvage	- Allow no salvage in the "no commercial timber harvest" areas unless needed to meet process group objectives (e.g., windthrown trees restricting fish passage in streams) - Allow salvage in other areas while meeting objectives
Roading	- Locate roads in this process group only when other reasonably feasible routes do not exist.

NOTES:

- A primary consideration for timber harvest within this Land Use Designation is to maintain windfirmness of the unharvested trees. Where additional distance is required to provide for reasonable assurance of windfirmness, harvest may be allowed, but will be limited to uneven-aged silvicultural systems.
- Commercial timber harvest guidelines beyond 100 feet may vary, based on site-specific analysis, but must meet process group objectives.
- Beyond 100 feet of the stream, incidental cutting of trees may be allowed in areas not programmed for commercial timber harvest on a case-by-case basis (e.g., for bridge stringers, totem poles, etc.).
- Stream Classes II and III do not normally occur in this process group. If they should occur, harvest control must meet management objectives for Class II and III of the Alluvial Fan Process Group.

Alluvial Fan Process Group
(Channel types AF1, AF2, AF8)

	Stream Class		
	I	II	III
Objectives	- Allow no activities which may cause floodplain destabilization - Assure the protection of riparian habitat - Maintain or improve aquatic biological productivity - Allow no measurable reduction in smolt habitat capability except when change is a result of natural processes - Restore stream and/or watersned condition where habitat capability has been reduced from the natural capability - Maintain/manage old-growth characteristic habitat for riparian-associated wildlife species	- Allow no activities which may cause floodplain destabilization - Assure the protection of riparian habitat - Maintain habitat capability for resident fish to the extent practicable	- Allow no activities which may cause floodplain destabilization - Assure the protection of riparian habitat - Minimize the effects of timber harvest and related land disturbance activities on the beneficial uses of water by applying Best Management Practices.
Harvest Control	- Allow no commercial timber harvest within active portion of fan or 100 feet of channel, whichever is greater - All harvest methods are available on remaining inactive portion of fan while meeting objectives	- Allow no commercial timber harvest within active portion of fan or 100 feet of channel, if the stream flows directly into a Class I stream (25 feet if not tributary to a Class I stream). - All harvest methods are available on remaining inactive portion of fan while meeting objectives - Allow single tree selection harvest within 25 to 60 feet from streambank if not within active portion of fan and not flowing directly into a Class I stream.	- Allow no programmed commercial timber harvest within active portion of fan or 25 feet of streambank, whichever is greater - All harvest methods are available on remaining inactive portion of fan while meeting objectives

Stream Class

	I	II	III
Harvest Rate	- Beyond 100 feet of the stream, strive to maintain 90% of the normal basal area with trees 16"+ dbh within areas with "no programmed commercial timber harvest" (see note below)	- Harvest should not exceed 50% of the forest land of individual fan. Remaining forested land is not to be harvested until created openings contain 50 foot tall conifer trees (approximately 30 yrs.)	
Salvage	- Allow no salvage in the no commercial timber harvest area unless needed to meet process group objectives (e.g., windthrown trees restricting fish passage in streams) - Allow salvage in other areas while meeting objectives		- Allow salvage in all areas while meeting objectives
Roading	- Anticipate unstable stream channels in determining the feasibility and/or most practical road locations, stream crossings, and design.		

NOTES:

- A primary consideration for timber harvest within this Land Use Designation is to maintain windfirmness of the unharvested trees. Where additional distance is required to provide for reasonable assurance of windfirmness, harvest may be allowed but will be limited to uneven-aged silvicultural systems.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, commercial timber harvest guidelines may vary, based on site-specific analysis, but must meet process group objectives.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, incidental cutting of trees may be allowed in areas not programmed for commercial timber harvest on a case-by-case basis (e.g. for bridge stringers, totem poles, etc.).

Moderate Gradient Mixed Control Process Group
(Channel types MM1, MM2)

	Stream Class		
	I	II	III
Objectives	- Assure protection of riparian habitat. - Allow no activities which may cause floodplain destabilization. - Maintain or improve aquatic biological productivity - Allow no measurable reduction in smolt habitat capability except when change is a result of natural processes - Restore stream and/or watershed condition where habitat capability has been reduced from the natural capability - Maintain/manage old-growth characteristic habitat for riparian-associated wildlife species	- Assure protection of riparian habitat. - Allow no activities which may cause floodplain destabilization - Maintain habitat capability for resident fish to the extent practicable	- Assure protection of riparian habitat. - Allow no activities which may cause floodplain destabilization. - Minimize the effects of timber harvest and related land disturbance activities on the beneficial uses of water by applying Best Management Practices.
Harvest Control	- Allow no commercial timber harvest within 100 feet of channels. - Allow single tree selection on remainder of the area.	- Allow no commercial timber harvest within 100 feet of streams which flow directly into Class I streams. For other streams, allow single tree selection harvest within 25 feet of MM1 channels and 50 feet of MM2 channels. - All harvest methods are available on remaining area; where timber harvest is allowed within 100 feet of the stream, final harvest should incorporate undulating unit boundaries to limit the amount of continuous disturbance parallel to the streambank	- Allow single tree selection within 25 feet of MM1 channels - All harvest methods are available on remaining area while meeting objectives

Stream Class

	I	II	III
Harvest Rate	- Forest-wide Standards and Guidelines for timber apply		
Salvage	- Allow no salvage in the "no commercial timber harvest areas" unless needed to meet process group objectives (e.g., windthrown trees restricting fish passage in streams) - Allow salvage in all areas while meeting objectives - Allow salvage in other areas while meeting objectives		
Roading	- Special road construction techniques may be required to ensure fish passage		

NOTES:

- A primary consideration for timber harvest within this Land Use Designation is to maintain windfirmness of the unharvested trees. Where additional distance is required to provide for reasonable assurance of windfirmness, harvest may be allowed but will be limited to uneven-aged silvicultural systems.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, commercial timber harvest guidelines may vary, based on site-specific analysis, but must meet process group objectives.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, incidental cutting of trees may be allowed in areas not programmed for commercial timber harvest on a case-by-case basis (e.g. for bridge stringers, totem poles, etc.).

Large Contained Process Group
(Channel types LC1, LC2)

	Stream Class I	Stream Class II
Objectives	- Maintain or improve aquatic biological productivity - Assure the protection of riparian habitat - Allow no activities which may cause floodplain destabilization - Allow no measurable reduction in smolt habitat capability except when change is a result of natural processes - Maintain/manage old-growth characteristic habitat for riparian-associated wildlife species	- Maintain habitat capability for resident fish to the extent practicable - Assure the protection of riparian habitat - Allow no activities which may cause flood-plain destabilization
Harvest Control	- Allow no commercial timber harvest within 100 feet - All harvest methods are available on remaining area while meeting objectives - Full suspension yarding is required to cross stream channel	- Allow no commercial timber harvest within 100 feet of streams which flow directly into Class I streams - Allow no programmed commercial timber harvest within 25 feet of other streams - All silvicultural systems are available on remaining area while meeting objectives - Minimize soil disturbance associated with yarding within inner gorge - Full suspension yarding is required to cross stream channel
Salvage	- Allow no salvage in the "no commercial timber harvest" areas unless needed to meet process group objectives (e.g., windthrown trees restricting fish passage in streams) - Allow salvage in other areas while meeting objectives	
Roading	- Road construction is generally not appropriate in this process group; where road crossings are required, minimize erosion and sedimentation associated with road crossing approaches within inner gorge	

NOTES:

- A primary consideration for timber harvest within the Land Use Designation is to maintain windfirmness of the unharvested trees. Where additional distance is required to provide for reasonable assurance of windfirmness, harvest may be allowed but will be limited to uneven-aged silvicultural systems.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, commercial timber harvest guidelines may vary, based on site-specific analysis, but must meet process group objectives.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, incidental cutting of trees may be allowed in areas not programmed for commercial timber harvest on a case-by-case basis (e.g. for bridge stringers, totem poles, etc.).
- Stream Class III does not normally occur in this process group. If it should occur, Harvest Control must meet Management Objectives for Class III of the Moderate Gradient Contained Process Group.

Moderate Gradient Contained Process Group
(Channel types MC1, MC2, MC3)

Stream Class

	I	II	III
Objectives	- Assure the protection of riparian habitat - Allow no activities which may cause floodplain destabilization - Maintain or improve aquatic biological productivity - Allow no measurable reduction in smolt habitat capability except when change is a result of natural processes - Restore stream and/or watershed condition where habitat capability has been reduced from the natural capability - Maintain/manage old-growth characteristic habitat for riparian-associated wildlife species	- Assure the protection of riparian habitat - Allow no activities which may cause floodplain destabilization - Maintain habitat capability for resident fish to the extent practicable	- Assure the protection of riparian habitat - Allow no activities which may cause floodplain destabilization - Minimize the effects of timber harvest and related land disturbance activities on the beneficial uses of water by applying Best Management Practices.
Harvest Control	- Allow no commercial timber harvest within 100 feet - Beyond 100 feet, selectively leave trees with crowns that do not extend above the slope break - Minimize soil disturbance associated with yarding within the inner gorge - Full suspension yarding required to cross stream channel - Maintain near-natural reserve tree component of stand	- Allow no commercial timber harvest within 100 feet of streams which flow directly into Class I streams - Selectively leave trees with crowns that do not extend above the slope break along streams which do not flow directly into Class I streams, and beyond 100 feet for other streams - Minimize soil disturbance associated with yarding within inner gorge - Full suspension yarding required to cross stream channel	- All harvest methods are available while meeting objectives - Minimize soil disturbance associated with yarding within the inner gorge.

Stream Class

	I	II	III
Salvage	- Allow no salvage in the 'no commercial timber harvest areas' unless needed to meet process group objectives (e.g., windthrown trees restricting fish passage in streams)		- Allow salvage in other areas while meeting objectives
Roading	- Where road crossings are required, minimize erosion and sedimentation associated with road crossing approaches within the inner gorge		

NOTES:

- A primary consideration for timber harvest within this Land Use Designation is to maintain windfirmness of the unharvested trees. Where additional distance is required to provide for reasonable assurance of windfirmness, harvest may be allowed but will be limited to uneven-aged silvicultural systems.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, commercial timber harvest guidelines may vary, based on site-specific analysis, but must meet process group objectives.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, incidental cutting of trees may be allowed in areas not programmed for commercial timber harvest on a case-by-case basis (e.g. for bridge stringers, totem poles, etc.).

High Gradient Contained Process Group
(Channel types HC1, HC2, HC3, HC4, HC5, HC6, HC8, HC9)

	Stream Class	
	II	III
Objectives	- Maintain habitat capability for resident fish to the extent practicable - Assure the protection of riparian habitat - Allow no activities which may cause floodplain destabilization.	- Minimize the effects of timber harvest and related land disturbance activities on the beneficial uses of water by applying Best Management Practices. - Assure the protection of riparian habitat - Allow no activities which may cause floodplain destabilization
Harvest Control	- Allow no commercial timber harvest within 100 feet of streams which flow directly into Class I streams - Selectively leave trees with crowns that do not extend above the slope break along streams which do not flow directly into Class I streams and beyond 100 feet for other streams. - Minimize soil disturbance associated with yarding within inner gorge. - Full suspension yarding required to cross stream channel.	- Allow harvest to streambank while meeting objectives - Full suspension required to cross stream channel
Harvest Rate	- Harvest rate not to exceed 25% of the acres every 20 years of a 3rd order or larger watershed. (Note: this guideline applies only to those acres associated with this LUD)	
Salvage	- Allow no salvage in the "no commercial timber harvest areas" unless needed to meet process group objectives (e.g., windthrown trees restricting fish passage in streams) - Allow salvage in other areas while meeting objectives.	- Allow salvage while meeting objectives

NOTES:
- Commercial timber harvest guidelines may vary, based on site-specific analysis, but must meet process group objectives.
- Stream Class I does not normally occur in this process group. If they should occur, Harvest Control must meet Management Objectives for Class I of the Moderate Gradient Contained Process Group.

Palustrine Process Group
(Channel types PA1, PA2, PA3, PA4, PA5)

	Stream Class I	Stream Class II
Objectives	- Maintain or improve aquatic biological productivity - Assure the protection of riparian habitat - Allow no activities which may cause floodplain destabilization - Restore stream and/or watersned condition where habitat capability has been reduced from the natural capability - Allow no measurable reduction in smolt habitat capability except when change is a result of natural processes - Maintain/manage old-growth characteristic habitat for riparian-associated wildlife species	- Maintain habitat capability for resident fish to the extent practicable - Assure the protection of riparian habitat - Allow no activities which may cause floodplain destabilization
Harvest Control	- Allow no commercial timber harvest within 100 feet - Allow no programmed commercial timber harvest beyond 100 feet	- Allow no commercial timber harvest within 100 feet of streams which flow directly into Class I streams - Allow no programmed commercial timber harvest along other streams and, for all streams, beyond 100 feet
Salvage	- Allow no salvage in the 'no commercial timber harvest areas' unless needed to meet process group objectives (e.g., windthrown trees restricting fish passage in streams) - Allow salvage in other areas using non-ground disturbing methods, while meeting objectives e.g. helicopter)	
Roading	- Wetland values should receive special consideration in locating roads.	

NOTES:

- A primary consideration for timber harvest within this Land Use Designation is to maintain windfirmness of the unharvested trees. Where additional distance is required to provide for reasonable assurance of windfirmness, harvest may be allowed but will be limited to uneven-aged silvicultural systems.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, commercial timber harvest guidelines may vary, based on site-specific analysis, but must meet process group objectives.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, incidental cutting of trees may be allowed in areas not programmed for commercial timber harvest on a case-by-case basis (e.g. for bridge stringers, totem poles, etc.).
- Stream Class III does not normally occur in this process group. If it should occur, Harvest Control must meet Management Objectives for Class III of the Moderate Gradient Contained Process Group.

Lakes and Ponds

(Channel types not classified as streams)

	Stream Class		
	I	II	III
Objectives	- Maintain or improve aquatic biological productivity	- Maintain habitat capability for resident fish to the extent practicable	- Minimize the effects of timber harvest and related land disturbance activities on the beneficial uses of water by applying Best Management Practices.
	- Assure the protection of riparian habitat - Restore stream and/or watershed condition where habitat capability has been reduced from the natural capability - Allow no measurable reduction in smolt habitat capability except when change is a result of natural change - Maintain/manage old-growth characteristic habitat for riparian-associated wildlife species	- Assure the protection of riparian habitat	- Assure the protection of riparian habitat
Harvest Control	- Allow no commercial timber harvest within 100 feet	- Allow no commercial timber harvest within 100 feet in width of lakes and ponds which: 1) flow directly into a Class I stream, or 2) flow into a Class II stream which flows directly into a Class I stream	- Maintain a minimum of 50% of natural shading vegetation for temperature sensitive lakes
	- Allow uneven-aged management 100 to 500 feet of lake or pond, or the extent of this LUD, whichever is less	- For lakes and ponds not flowing directly into a Class I stream, allow uneven-aged management within 100 feet of lakes and ponds less 50 acres	
	- Any silvicultural system applies for remainder of area while meeting objectives.	- Allow uneven-aged management 100 to 500 feet, or extent of land use designation whichever is less, of lakes greater than 50 acres - Any silvicultural systems apply for the remainder of the area while meeting objectives	- All silvicultural systems available while meeting objectives
		- Treat as the adjacent LUD if lake or pond is less than 5 acres	- Treat as the adjacent LUD if lake or pond is less than 5 acres

	Stream Class		
	I	II	III
Salvage	- Allow no salvage in the "no commercial timber harvest areas" unless needed to meet process group objectives (e.g., windthrown trees restricting fish passage in streams) - Allow salvage in other areas while meeting objectives		- Allow salvage in all areas while meeting objectives
Roading	- Roads may be allowed if other practical alternatives are not available or if needed to access the water body for recreation or other needs		

NOTE:
- A primary consideration for timber harvest within this Land Use Designation is to maintain windfirmness of the unharvested trees. Where additional distance is required to provide for reasonable assurance of windfirmness, harvest may be allowed but will be limited to uneven-aged silvicultural systems.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, commercial timber harvest guidelines may vary, based on site-specific analysis, but must meet process group objectives.
- Except within 100 feet of a Class I stream and 100 feet of a Class II stream which flows directly into a Class I stream, incidental cutting of trees may be allowed in areas not programmed for commercial timber harvest on a case-by-case basis (e.g. for bridge stringers, totem poles, etc.).

Estuarine Process Group*
(Channel types ES1, ES2, ES3, ES4, ES8)

	Stream Class I
Objectives	- Maintain or improve aquatic biological productivity - Assure the protection of riparian habitat - Allow no measurable reduction in smolt habitat capability except when change is a result of natural processes - Restore stream and/or watershed condition where habitat capability has been reduced from the natural capability - Maintain/manage old-growth characteristic habitat for riparian-associated wildlife species
Harvest Control	- Allow no commercial timber harvest within 100 feet - Allow no programmed commercial timber harvest within 100 to 500 feet of ES4 and ES8 estuarine channels, or the extent of this Land Use Designation, whichever is less - Allow no programmed commercial timber harvest within 100 to 200 feet of ES2 and ES3 estuarine channels, or the extent of this Land Use Designation, whichever is less - Allow uneven-aged silvicultural system for remainder of area
Harvest Rate	- Beyond 100' from the stream, strive to maintain 90% of the normal basal area with trees 16"+ dbh within areas with no programmed commercial timber harvest (see note below)
Salvage	- Allow no salvage in the "no commercial timber harvest areas" unless needed to meet process group objectives (e.g., windthrown trees restricting fish passage in streams) - Allow salvage in other areas while meeting objectives
Roading	- Juvenile fish passage may require special attention - Generally, no roading should occur in estuarine wetland areas

NOTES:

* This area is often covered by the Beach Fringe and Estuarine Forestwide Standards and Guidelines which would take precedence over management under the Riparian Area Prescription.

- A primary consideration for timber harvest within this Land Use Designation is to maintain windfirmness of the unharvested trees. Where additional distance is required to provide for reasonable assurance of windfirmness, harvest may be allowed but will be limited to uneven-aged silvicultural systems.
- Commercial timber harvest guidelines beyond 100 feet may vary, based on site-specific analysis, but must meet process group objectives.
- Beyond 100 feet of the stream, incidental cutting of trees may be allowed in areas not programmed for commercial timber harvest on a case-by-case basis (e.g., for bridge stringers, totem poles, etc.).
- Stream Classes II and III do not normally occur in this process group. If they should occur, Harvest Control must meet Management Objectives for Class II and III of the Lakes and Ponds Process Group.

Appendix D

Biological Assessment and Biological Evaluation

Draft
BIOLOGICAL ASSESSMENT and BIOLOGICAL EVALUATION for the Chasina Project Area

April 1996

This combined draft Biological Assessment and Biological Evaluation was prepared for the Chasina Project Area as required by Section 7 of the Endangered Species Act (as amended) and the USDA Forest Service threatened, endangered, and sensitive plant and animal species policy (FSM 2670). This document describes the occurrence of and project effects on species that are Federally listed or proposed for threatened or endangered status. Although not required, candidate plant and animal species within the Project Area are also addressed. This document also serves as a BE by including equivalent information on Forest Service-listed sensitive species. The BE is not required under ESA, but is required by the Forest Service for all internal programs and activities (FSM 2672.4).

An Environmental Impact Statement is being prepared for the Chasina Project Area. The Chasina Project Area includes 68,927 acres, approximately 25 air miles southwest of Ketchikan, Alaska. It encompasses an area of southern Prince of Wales Island, from West Arm Cholmondeley Sound east to include all of Chasina Point. The Project Area includes Wildlife Analysis Areas (WAA's) 1210, 1211, and 1213. The action includes the harvest of approximately 1,200 to 4,300 acres of old-growth forest, construction of 12-64 miles of new roads, the use of one existing log transfer facility, and the construction of two new log transfer facilities.

This BA/BE addresses a total of 31 plant and animal species. It covers the endangered humpback whale (*Megapter novaeangliae*), American peregrine falcon (*Falco peregrinus anatum*), and the Eskimo curlew (*Numenius borealis*); the threatened Aleutian Canada goose (*Branta canadensis leucopareia*), and the Steller sea lion (*Eumetopias jubata*); one frog, four plant, and six bird species that are Federal Species of Concern. It also includes three bird species and 10 plant species on the Forest Service Region 10 sensitive species list, but are not listed as endangered, threatened or species of concern under the Endangered Species Act.

I. IDENTIFICATION OF ENDANGERED AND THREATENED SPECIES AND/OR CRITICAL HABITATS FOR SUCH SPECIES WITHIN THE PROJECT AREA.

A. Federal Threatened, Endangered, and Candidate Species

Federally listed threatened and endangered species are those plants and animal species formally listed by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS), under the authority of the Endangered Species Act of 1973, as amended. An endangered species is defined as one which is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Species of Concern are species that the USFWS remains concerned about the long-term viability of the species, and the potential for listing as threatened or endangered still remains.

Species listed as endangered or threatened are provided statutory protection under the Endangered Species Act of 1973, as amended; species of concern are not. Therefore, under the Endangered Species Act, agencies technically have no legal obligation to take action on species of concern. Although the USFWS and NMFS do not have legal authority to regulate management of National Forest lands for species of concern, the Forest Service has agreed to coordinate closely with the USFWS and NMFS in an effort to prevent species of concern declining to where they need to be listed as threatened or endangered (Memorandum of Understanding January 25, 1994).

The State of Alaska has an Endangered Species Law which authorizes the Commissioner of the Alaska Department of Fish and Game (ADF&G) to list Alaska endangered species and species of concern.

Table 1 summarizes the threatened, endangered, and species of concern plants and animals occurring on or near the Chasina Project Area which are addressed in this Biological Assessment and Biological Evaluation.

Table 1
Status* of Threatened, Endangered, and Species of Concern Occurring On or Near the Chasina Project Area with Summary BA/BE Finding.

SPECIES		STATUS	BA/BE FINDING	
	USF-WS	FS	STATE	
Animals				
Humpback whale	E		E	Not...Adversly Effect
Steller sea Lion	T			Not...Adversly Effect
Alexander Archipelago wolf	C			May Effect -
American Peregrine falcon	E		E	Not...Adversly Effect
Arctic Peregrine falcon	C		E	Not...Adversly Effect
Aleutian Canada goose	T		E	Not...Adversly Effect
Trumpeter swan		S		No Effect
Eskimo curlew	E		E	Not...Adversly Effect
Marbled Murrelet	C		CS	May Effect -
Kittlitz's murrelet	C			No Effect
Osprey		S		No Effect
Queen Charlotte Goshawk	C	S	CS	May Effect -
Harlequin Duck	C			No Effect
Olive-sided flycatcher	C			May Effect +
Spotted Frog	C			No Effect
Fish				
Bull Trout	C			No Effect

SPECIES		STATUS	BA/BE FINDING	
Plants				
Aster yukonensis	C			No Effect
Calamagrostis crassiglumis	C			No Effect
Carex lenticularis var. dolia	C	S		No Effect
Montia bostockii	C			No Effect
Cirsium edule		S		No Effect
Glyceria leptostachya		S		No Effect
Hymenophyllum wrightii		S		No Effect
Isoetes truncata		S		No Effect
Ligusticum calderi		S		No Effect
Platanthera chorisianna		S		May Effect -
Platanthera gracilis		S		No Effect
Poa laxiflora		S		No Effect
Rannunculus orthorhynchus var. alaschensis S				No Effect
Senecio moresbiensis		S		No Effect
* E = Endangered, Federal or State; T = Threatened, Federal; C = Species of Concern, Federal; CS = Candidate, State; S = Sensitive, FS Region 10.				

There has been no critical habitat officially designated for any of these species at this time in Southeast Alaska, except for specific rookery (Mating and pupping) and haulout locations for Steller sea lions (CFR part 226, August 27, 1993).

The USFWS has identified Queen Charlotte goshawk, Alexander Archipelago wolf, harlequin duck, olive-sided flycatcher and marbled murrelet as being "Species of Concern" that may be affected by the proposed project in a recent letter responding to the NOI for the Chasina project.

The endangered American peregrine falcon may migrate through the project area, as may the Eskimo curlew, and the Aleutian Canada goose. The Harlequin duck and the Steller sea lion occurs in the adjacent saltwater. There has been no evidence of the existence of any other listed species within the Project Area.

The humpback whale (*Megaptera novaeangliae*) and Steller sea lion (*Eumetopias jubata*) were listed by the National Marine Fisheries Service (NMFS) in an assessment of the Project Area (Pennoyer February 6, 1992). During 1991, NMFS completed final recovery plans for the humpback whales. The Steller (northern) sea lion is currently listed as threatened (*Federal Register* Dec. 4, 1990; NMFS 1992). Presently, critical habitat has not been designated for either species (Pennoyer February 6, 1992).

No plant species known to occur in the Project Area have been determined to be threatened or endangered. A Forest Service listed sensitive species was found within the project boundary-Choris bog orchid (*Platanthera Chorisiana*). Plant species of concern, *Calamagrostis crassiglumis* and *Carex lenticularis* could potentially occur within the Project Area, but have not been documented or found.

No fish species known to occur in the Project Area have been determined to be threatened, endangered, or sensitive.

II. THREATENED/ENDANGERED SPECIES ASSESSMENTS

HUMPBACK WHALE (*Megaptera novaeangliae*)

Distribution and Population

Humpback whales are the most abundant of the eight species of endangered whales that occur in Southeast Alaska waters. Their population in the North Pacific is about 1,200, which is about eight percent of the prewhaling population. These whales are regularly sighted in the Inside Passage and coastal waters of the Southeast Alaska panhandle from Yakutat Bay south to Queen Charlotte Sound. Humpback whales feed in Southeast Alaskan panhandle waters from about May through December, although some have been seen every month of the year. Peak numbers of whales are usually found in nearshore waters during late August and September, but substantial numbers usually remain until early winter. Baker et al. (1985) estimate that 300-350 humpback whales inhabit Southeast Alaska during the summer and fall.

The local distribution of humpbacks in Southeast Alaska appears to be correlated with the density and seasonal availability of prey, particularly herring (*Clupea harengus*) and euphausiids. Important feeding areas include Glacier Bay and adjacent portions of Icy Straight, Stephens Passage/Frederick Sound, Seymour Canal and Sitka Sound. Glacier Bay and Icy Straight appear to be an important feeding area early in the season, when whales prey heavily on herring and other small, schooling fishes. Frederick Sound is important later in summer, when whales feed on swarming euphausiids. During autumn and early winter, humpbacks

move out of the Sound to areas where herring are abundant, particularly Seymour Canal. Other areas of Southeast Alaska may also be important for humpbacks and need to be evaluated. These include: Cape Fairweather, Lynn Canal, Sumner Strait, Dixon Entrance, the west coast of Prince of Wales Island, and offshore banks such as the Fairweather Grounds.

Because the humpback inhabits shallow coastal areas, it is increasingly exposed to human activity. Consequently, these whales may be more susceptible to confrontational disturbance, displacement, and loss of habitat from environmental degradation than some other whale species. Humpbacks summering in Southeast Alaska have been linked to each of three wintering areas in Mexico, Hawaii, and Asia.

Effects of Chasina Proposed Actions on Population or Habitat

The recovery plans for the humpback whale identified six known or potential categories of human impacts to these species: hunting, entrapment and entanglement in fishing gear, collisions with ships, acoustic disturbance, habitat degradation, and competition for resources with humans.

National Forest management activities which may have an effect on whale habitats or populations generally fall into the categories of acoustic disturbance and habitat degradation. These management activities include: the development and use of log transfer facilities (LTF's) and their associated camps, the movement of log rafts from log transfer facilities to mills, and the potential development of other docks and associated facilities for mining, recreation, and other forest uses and activities. Generally, with the development and use of LTF's and other docking facilities for projects, there is an associated increase in recreational boating in the immediate vicinity during the construction and use of the facilities.

Most of the information and data for whales in Southeast Alaska are associated with one species, the humpback whale, because it is the most abundant whale to occur in Southeast Alaska waters. The other seven species of whales are either present only seasonally as they migrate along the outer coastal areas, or are only occasionally found in the inside coastal waters of Southeast Alaska. The following discussion and analysis is primarily based on humpback whales, but is assumed to be applicable to the other species of whales.

Construction and operation of LTF's and other docking facilities are restricted to small, very localized areas of the marine environment. There is one LTF currently on National Forest System lands (Lancaster Cove). An estimated 2 acres of marine benthic disturbance associated with this existing LTF's could occur as a result of bark deposition. There are also several LTF's on Kootznoowoo Inc. lands (Dora Bay and Port Johnson). Two additional LTF's are proposed for construction in various alternatives (Cannery Creek and North Arm Moira Sound). Both sites have been checked by USFWS biologists and have been found to be suitable for LTF development.

There is little potential to directly affect whales with these facilities. During the summer of 1989, there was a report of a humpback whale entangled in some cables from an inactive LTF site on the Stikine Area. This is the only known direct effect incident related to LTF's.

Two potential indirect effects of LTF's and other docking facilities and associated activities have been identified: 1) effects on whale prey species, and 2) disturbances of whales by boat traffic associated with LTF's.

Effects on Prey. Nemoto (1970) noted that euphausiids and gregarious fish are the primary prey of humpbacks. Thirteen species of fish and 57 species of invertebrates were identified as humpback whale prey in Southeast Alaska. Humpbacks studied in Glacier Bay and Stephens Passage-Frederick Sound were found most frequently in areas of high prey density (Wing and Krieger 1983).

Construction and operation of all LTF's and similar facilities require U.S. Army Corps of Engineer and U.S. Environmental Protection Agency permits, and State of Alaska tidelands permits. The permitting process provides that construction and operation maintain water quality in the specific facility locations, and that marine circulation and flushing are maintained. All facilities must be in conformance with permit standards. Although the effects may vary locally, the major effect of leachates (ie. terpene, alpha-conindentric acid, alpha-conindentrin, hydroxymatairesinol, linoletic acid, and dehydroabientic acid) from stored log rafts, is upon invertebrates.
Crustaceans, shrimp, and crab larvae, seem especially sensitive (Pease 1973, Buchanan and Tate 1976). EPA measuring techniques may be required to monitor the LC_{50} levels at each LTF (Peltier and Weber 1985) in order to insure impacts are limited to the approved "zone of deposit". A local increase in the herring and herring egg fishery could also impact this food item.

Effects from Disturbance. Humpback whale response to nearby boating activity varies from no apparent response to pod dispersal, sounding, breaching, evasive underwater maneuvers, and maintaining distance (Baker and Herman 1983, Baker et. al. 1982). Disturbance by boat activity has been suggested as one of the possible causes of observed changes in whale distribution in Southeast Alaska. Direct pursuit of whales by boats, and frequent changes in boat speed and direction appear to elicit avoidance behaviors more frequently than other types of boat traffic. However, whales may readily habituate to constant and familiar noise (Norris and Reeves 1978). Whales can be commonly found in some areas of Southeast Alaska which have considerable boat traffic. Whether they are habituated to boat traffic has not yet been documented. Adverse effects from current levels of boat traffic have not yet been documented.

Two basic types of boat activity associated with LTF's are log raft towing and recreational boating by workers. Log raft towing frequency would vary between camps, seasons, and years, with an average of about once a week during the working season (U.S.D.A. Forest Service 1989). Tug boats maintain relatively constant speeds and directions during log raft towing; constant speed and direction elicit less avoidance behavior from whales than other types of boating activity. Log raft towing routes are generally well established, and adverse effects from log raft towing have not been documented.

Recreational boating activity by camp residents would vary between seasons, years, and camps of different sizes. This activity would be concentrated near LTF sites, other docking facilities, and camps. It is estimated that most recreational boating would occur within a few miles of the site, few trips would be made over 10 miles, and activity greater than 30 miles from a site would be negligible. This boating would involve frequent changes in speed and direction and may include some small amount of whale pursuit, if the whales are within sight of the camp or an occupied boat. The effect of such recreational activity on whales would depend on many factors such as size of the bay, depth of the waters in the bay, number of boats, individual behavior responses of the whales, etc. At the present time, there is not a quantifiable way to estimate these possible effects.

The following Forest-wide standards and guidelines have been developed for application on all Forest Service permitted or approved activities and will be incorporated into the Chasina DEIS from the Supplement DEIS Tongass Land Management Plan by reference:

Provide for the protection and maintenance of whale habitats:

1. Avoid intentional aircraft flights below 500 feet above ground level in the known vicinity of whales on Forest Service permitted or approved activities, when weather ceilings permit.

2. Avoid intentional approach in a vessel of 100 feet or more in length to within 1/4 mile of whales on Forest Service permitted or approved activities, when safe passage exists.

3. Avoid intentional approach in a vessel of less than 100 feet in length to within 100 yards of whales on Forest Service permitted or approved activities, when safe passage exists.

No adverse effects on whales from implementation of Forest management activities are anticipated. Indirect effects may be associated with possible increased boating activity, but are mitigated by Forest Service and NMFS standard and Guidelines

STELLER SEA LION (*Eumetopias jubata*)

Distribution and Population

The Steller (northern) sea lion ranges from Hokkaido, Japan, through the Kuril Islands and Okhotsk Sea, Aleutian Islands and central Bering Sea, Gulf of Alaska, Southeast Alaska, and south to central California. There is not sufficient information to consider animals in different geographic regions as separate populations. The centers of abundance and distribution are the Gulf of Alaska and Aleutian Islands, respectively.

In 1990, because of an abrupt population decline observed over the last 31 years (primarily in the former Soviet Union, Gulf of Alaska, and Aleutian Islands), the NMFS listed the Steller sea lion as a threatened species throughout its range. The number of sea lions observed on certain rookeries from Kenai Peninsula to Kiska Island declined by 63 percent since 1985 and by 82 percent since 1960. Significant declines have also occurred on the Kuril Islands. Information on population trends in Southeast Alaska is sketchy, but what data does exist suggests that Southeast populations are stable or perhaps slightly decreasing.

The cause of overall population declines has not been confirmed. However, incidental mortality of sea lions in commercial fishing gear, shooting by fishermen, and reduced prey species due to commercial fishing operations have probably contributed significantly to declines (Reeves et al. 1992).

When the sea lion was given emergency listing as a threatened species in the *Federal Register* (April 5, 1990), buffer zones restricting human activities were established around rookeries west of 150 degrees west longitude (does not include Southeast Alaska). The closest Steller sea lion rookery to the Chasina Project Area is on Forrester Island, west of Prince of Wales Island. Sea lion haulouts used for sunning and resting occur on Grindall Island, of the south tip of Kasaan Peninsula and Cape Addington on Noyes Island. They are not designated as critical habitat. A recovery team has prepared a draft recovery plan.

Important food resources include walleye pollock, salmon, eulachon, and cephalopod mollusks. Steller sea lions forage predominantly in nearshore areas and over the continental shelf.

Effects of Chasina Proposed Actions on Population or Habitat

The NMFS provides a summary of factors affecting the Steller sea lion (*Federal Register* April 5, 1991). These factors include reductions in the availability of food resources, especially pollock, which is the most important prey species for sea lions; commercial harvests of sea lion pups; harvests for subsistence and for public display and scientific research purposes; predation by sharks, killer whales, and brown bear; disease; the inadequacy of existing regulations regarding quotas on the incidental harvesting of sea lions during commercial fishing operations; other natural or human incidences such as shooting adult sea lions at rookeries, haulout sites, and in the water near boats. None of these factors are regulated by or within the jurisdiction of the Forest Service.

Southeast Alaska populations of Steller sea lions have not declined to the extent that other populations have. Harassment or displacement of sea lions from preferred habitats by human activities such as boating, recreation, aircraft, log transfer facilities, log raft towing, etc., is a concern with regard to long-term conservation of the sea lion in Southeast Alaska. Forest-wide standards and guidelines direct the Forest Service to

prevent and/or reduce potential harassment of sea lions and other marine mammals due to activities carried out by or under the jurisdiction of the Forest Service, and these will be incorporated by reference into the Chasina DEIS from the Supplement DEIS Tongass Land Management Plan.

No direct effects on sea lions from Forest management activities are anticipated. Compliance with these standards and guidelines will result in no anticipated adverse effects on sea lion populations or their habitats for any of the alternatives

AMERICAN PEREGRINE FALCON (*Falco peregrinus anatum*)

Distribution and Population

The American peregrine falcon is primarily associated with interior Alaska for breeding, nesting and rearing of young. The falcon is highly migratory, wintering as far south as northern Argentina and occurring in Southeast Alaska only during migration periods (Ambrose, et al., 1988). Reproduction has increased population numbers three-fold in Alaska (ADF&G letter Feb. 6, 1987, Ambrose, et al., 1988, minutes of Interagency Wildlife Technical Committee Meeting of March 29, 1991). Population numbers of the American peregrine falcon are continuing to increase (ADF&G letter dated February 6, 1987; Ambrose et al. 1988).

Effects of Chasina Proposed Action on Population or Habitat

The American peregrine falcon occur in Southeast Alaska only during migration. The primary reason for past declines in peregrine falcon populations was the proliferation of organochlorine pesticides, especially DDT and its principal metabolite DDE (Ratcliff 1969; Peskall 1976; Cade et al. 1971; Peskall and Kiff 1979; USFWS 1982). No organochlorine pesticides are authorized for use on the Tongass National Forest.

During migration through Southeast Alaska, the availability and abundance of prey species will most likely be the primary habitat factor affecting peregrine falcons. In coastal areas of Washington, the primary prey species for peregrine falcons were shorebirds and waterfowl species; passerine birds were also identified in the diet (Anderson and Debruyn 1979; Anderson et al. 1980). It is assumed that food sources would be similar for coastal Alaska. Peregrines forage over open sites such as over bodies of water, marshes, grasslands, and shorelines, as well as above wooded areas. Peregrines attack flying prey from above or by chasing them. Although they forage over wide areas, they also have preferred foraging sites (White 1974).

Actual migration routes and patterns, and foraging areas, have not been identified for these two subspecies of peregrines in Southeast Alaska. Forest-wide standards and guidelines have been developed for protecting seabird rookeries and waterfowl concentration areas (pages 4-102 to 4-104 in U.S.D.A. Forest Service 1991b). A wide variety of passerine (perching and song) birds will be available from numerous open and forested communities under all alternatives associated with the Chasina Project.

No adverse effects on American peregrine falcon populations or their habitats are anticipated with any Forest management activities under any of the alternatives.

ALEUTIAN CANADA GOOSE (*Branta canadensis leucopareia*)

Distribution and Population

The breeding, nesting, and rearing of young Aleutian Canada geese is primarily associated with the Aleutian Islands. The Aleutian Canada goose winters in western Oregon, and in northwestern and central California. Although their movements within Alaska are not well known, the Aleutian Canada goose may occur in Southeast Alaska during migration. Population numbers in Alaska are increasing, and the USFWS is considering removing the species from the threatened list.

Effects of Chasina Proposed Action on Population or Habitat

The Aleutian Canada goose is not primarily associated with Southeast Alaska. Although migration patterns in Alaska are not well known, Aleutian Canada geese may occur in Southeast Alaska as migrants. Due to the limited use of the Project Area by Aleutian Canada geese, no adverse effects on their population by any of the alternatives is anticipated.

ESKIMO CURLEW (*Numenius borealis*)

Distribution and Population

The Eskimo curlew is primarily associated with western and northern Alaska. The Eskimo curlew is rare and not typically found in Southeast Alaska, but it may occur as a migrant.

Effects of Chasina Proposed Action on Population or Habitat

Due to the limited use of the Project Area by the Eskimo curlew, no adverse effects on their population by any of the alternatives is anticipated.

III. SPECIES of CONCERN ASSESSMENTS

ALEXANDER ARCHIPELAGO WOLF (Canis lupus ligoni)

Taxonomic Status and Range

The Alexander Archipelago wolf is a small subspecies of the gray wolf (Goldman 1937, Pedersen 1983), similar in appearance to the Vancouver Island wolf (*C.l. crassodon*). Kirchhoff (1992) described the Alexander Archipelago wolf as occurring on the Southeast Alaska mainland and all large island in Southeast Alaska except for Admiralty, Baranof, and Chichagof.

On December 17, 1993, the USFWS received a petition from the Biodiversity Legal Foundation to list the Alexander Archipelago wolf of Southeast Alaska as threatened pursuant to the Endangered Species Act. On May 13, 1994, the USFWS found that the petitioners had presented substantial information indicating that

listing may be warranted and a status review of the species was initiated. On February 16, 1995, the USFWS found that there was not enough scientific evidence to warrant listing.

The primary food of most Southeast Alaskan wolves is deer (Wood 1990, Person 1993). Beaver, mountain goat, and moose are also primary prey in some mainland areas and spawning salmon are fed on when available (Wood 1990). Alexander Archipelago wolf abundance is likely linked to deer abundance and availability, particularily in southern island habitats (Suring et al. 1988, Wood 1990, Person 1993).

Based on field observations, discussions with trappers and anedotal information, the wolf population in Southeast Alaska is estimated to be 635 to 690 individuals, distributed in 85 packs (Morgan 1990). However, Person (per. comm. 1994, as cited in USFWS letter) estimates that the current Southeast population is 1,000 individuals and that 30-40 percent of them occupy Prince of Wales Island.

Many studies have shown that wolf abundance may be correlated with road density (Theil 1985, Jensen et al. 1986, Mech et al. 1988, Fuller 1989). In one study, wolves generally were not present where the density of roads used by humans exceeded 0.93 mi/sq mi (0.58 km/sq km) (Mech et al. 1988). However, other work has suggested that wolves could exist in areas with higher densities if these areas were adjacent to roadless areas (Mech et al. 1988). The primary threat of high road densities is the increased access to humans who kill wolves by shooting, snaring, or trapping (Van Ballenberghe et al. 1975, Mech 1977).

Based on application of the Tongass Habitat Capability Model for the gray wolf (see Chasina DEIS), habitat capability declined by about 16% in the Project Area between pre-logging and existing conditions. This decline is directly related to a reduction in deer habitat capability associated with conversion of old-growth forest to young second growth. Accompanying this decline has been an increase in road density associated with logging activities. Road density under existing conditions is approximately 1.6 mi/sq mi across the Project Area when including native and state ownership, and .34 mi/sq mi when only considering roads on National Forest System lands.

Effects of Chasina Proposed Action on Population or Habitat

Implementation of any of the Chasina Project action alternatives will result in a reduction in deer habitat capability. Wolf habitat capability is predicted to be reduced in proportion to the reduction in deer habitat capability. The wolf habitat capability reduction is predicted to range from 4 percent for Alternative 2 to 16 percent for Alternative 6, and 7, 10, and 9 percent respectively for Alternatives 3, 4 and 5.

Road densities will also increase in the Project Area as a result of implementation of one of the action alternatives. Total road density would range from 0.46 mi/sq mi for Alternative 2 and 1.3 mi/sq mi for Alternative 6 after implementation. However, the effect of increased road density would be substantially mitigated by access management and the fact that the road system in the Project Area is not connected to a population center (not connected to a road system to Craig, Thorne Bay, Hydaburg etc.).

Because of the reduction in deer habitat capability and the increase in road density associated with implementation of one of the action alternatives, the Chasina Project may affect the Alexander Archipelago wolf.

ARTIC PEREGRINE FALCON (Falco peregrinus tundris)

Distribution and Population

The Artic peregrine falcon is primarily associated with the area north of the Brooks Range and Seward Peninsula; it is highly migratory, wintering as far south as northern Argentina (Ambrose et al. 1988). It occurs in Southeast Alaska only during miration periods. Population numbers have increased three-fold in Alaska (ADF&G letter Feb. 1987; Ambrose et al. 1988; minutes of Interagency Wildlife Technical Committee Meeting

of March 20, 1991). Effective November 4, 1994, the USFWS removed the species from the threatened list. It now has the status of a species of concern.

Effects of Chasina Proposed Action on Population or Habitat

As described for the American peregrine falcon, no effects on the population or habitat of the Artic peregrine falcon are anticipated due to the Chasina action alternatives.

MARBLED MURRELET (*Brachyramphus marmoratum*)

The marbled murrelet is a small seabird that belongs to the family Alcidae. It is found throughout the North Pacific. The North American subspecies (*B. m. marmoratus*) ranges from the Aleutian Archipelago in Alaska, eastward to Cook Inlet, Kodiak Island, Kenai Peninsula, and Prince William Sound, southward coastally throughout the Alexander Archipelago of Alaska and through British Columbia, Washington, Oregon to central California, with individuals wintering as far south as southern California (Marshall 1988, USFWS 1992). The species feeds below the water's surface on small fish and invertebrates in near-shore marine waters (Marshall 1988, USFWS 1992).

Marbled murrelets nest on land or in trees and lay only one egg. They are semi-colonial in their nesting habitats; nesting marbled murrelets are often aggregated (USFWS 1992). Alaska is the only state where marbled murrelets are known to nest on the ground in treeless areas. At least 18 ground nests have been identified with certainty as of 1994, based on sightings of the incubating bird (Mendenhall 1992, pers. comm., K. Nelson, Oregon Coop. Wildl. Res. Unit, Corvallis 1995 as cited in Polk Inlet BA/BE). Through 1994, a minimum of 73 tree nests have been located in North America (26 in Oregon, 6 in Washington, 11 in California, 11 in British Columbia and 19 in Alaska). Of 47 nests found in Washington, Oregon and California where data were available, all were located in old-growth trees that ranged in diameter at breast height from 35 inches to 210 inches. Nest trees located in Alaska ranged from 12 to 41 inches DBH (pers. comm., K.Nelson as cited in Polk Inlet BA/BE). Nests were located high above the ground and usually had good overhead protection (USFWS 1992). Both males and females incubate the eggs; one bird stays at the nest for 24 hours, while the other is feeding on the ocean. After hatching their young, the adults stay at the nest with the young bird for only about four days. After that, the young bird is left alone in the nest, except when the adults return to the nest to feed it (Interagency Meeting Records June 12, 1989).

Except for the fall period when they are molting, flightless, and stay on the ocean, birds have been known to fly to tree stands every month of the year. In Washington, birds have been recorded up to 50 miles inland (Hamer and Cummins 1991, in USFWS 1992).

Overview of work in Alaska. There is a current upland study of marbled murrelets on Naked Island in Prince William Sound. In the study area, murrelets flew most frequently into two areas with steep slopes facing west, and 70-80% cover of hemlock old-growth. A cursory review of the small sample suggested greater murrelet use of inland areas at the heads of bays as opposed to the outer peninsulas. Slopes facing northeast, west or southwest may have greater use than slopes facing north, northeast or southeast on Naked Island (Kuletz 1991).

A cooperative pilot study/survey between the Forest Service and the USFWS began in the summer of 1991, to evaluate possible at-sea survey techniques. Data from this study will be used to develop a statistically valid sampling design for a region-wide inventory to ascertain abundance and distribution of marbled murrelets in Southeast Alaska. This work will continue in 1993 and will include studies to evaluate factors which affect daily and seasonal distributions of murrelets.

Marbled murrelets are common along the coast of the Project Area. Boat transect surveys were conducted along the shoreline of logged and unlogged areas by the Craig and Misty Fiords Ranger Districts in 1991;

these surveys counted 7.5 and 10 marbled murrelets respectively, per kilometer traveled parallel to the shoreline in transects 200 meters wide. Assuming that marbled murrelets along the Prince of Wales Island coast nest within the Chasina Project Area, and assuming a conservative estimate of seven marbled murrelets per kilometer of shoreline for the Project Area, then Chasina (270 km of shoreline) might provide habitat for 1,890 marbled murrelets. This figure is likely low, because the Craig and Misty survey figures were for 200 meter wide transects, not for all distances out from the shoreline. The estimate for Chasina assumes that the figure from the survey vicinity can be extrapolated to Chasina and that birds nest in the general vicinity of where they are seen at sea.

In 1984 during a marbled murrelet research project conducted by the ADF&G, a tree nest was found on Baranof Island. This nest was on a large horizontal limb, 82 feet up in a mountain hemlock tree. In 1989, two more tree nests were found in California. Both nests were in large Douglas-fir trees, on large horizontal limbs, and were watched 24 hours a day. A newly hatched bird at one of these nests was carried off by a raven (Interagency Meeting Records, June 12, 1989). Thorne Bay Ranger District personnel collected data on a nesting stand on Prince of Wales Island in 1990. An occupied marbled murrelet ground nest was found in 1992 on Thorne Bay Ranger District. Stand data were collected in association with this sighting.

In 1992, marbled murrelet at-sea surveys were conducted in the Project Area (Lancaster Cove, Kitkun Bay, and Dora Bay) on July 22. The number of murrelets surveyed were 255 in Lancaster Cove (8 km), 31 in Kitkun Bay (6.5 km) and 80 in Dora Bay (8 km), which averaged 16.5 murrelets/km of survey. In 1995 morning counts were conducted from the Tongass Ranger boat while anchored in McLean Arm and Hunter Bay (SW Prince of Wales Island, approximately 20 south of Project Area). The morning of July 14th, 23 birds were counted in McLean Arm and on July 14th, 44 marbled murrelets were counted in Hunter Bay.

Old growth removal is not the only factor which may be influencing murrelet populations; other known factors include oil spills, predation, and commercial fishing (murrelets are caught in fishing nets). Mendenhall (1992) estimated the marbled murrelet population for Southeast Alaska ranged from 75,000 to 150,000 during the summer, based on surveys by M. McAllister from 1981-1988. C.J.Ralph et al. (1995) estimated the marbled murrelet population in the Alexander Archipelage to be approximately 96,200, based on at-sea survey data.

Effects of Chasina Proposed Action on Population or Habitat

No nesting sites for marbled murrelets have been identified within the Project Area, although eggshells were found at several sites. It is assumed that much of the old-growth forest within the project area is suitable nesting habitat.

Since all inland forest stands on the Tongass National Forest are less than 25 miles from salt water, all could be potential marbled murrelet nesting habitat (USDI Fish and Wildlife Service 1992). However, these birds more commonly occupy larger stands (greater than 500 acres) than smaller stands (less than 100 acres) in California; marbled murrelets are usually absent from stands less than 60 acres in size (Paton and Ralph 1988, Ralph et al. 1990). Without precise knowledge to delineate the differences, all old-growth habitat greater than 8 MBF/acre is assumed to be suitable for nesting.

All action alternatives will harvest stands which may be capable of providing nesting habitat (old-growth forests) for marbled murrelets. Table 3 shows that Alternative 2 harvests 5 percent, Alternative 3 harvests 8 percent, Alternatives 4 harvests 12 percent, alternative 5 harvests 9 percent, and Alternative 6 harvests 17 percent of the old-growth habitat (VC 4-7) in the Project Area, leaving at least 19,953 acres of old-growth unharvested.

Timber harvesting will reduce the amount of nesting habitat for marbled murrelets. Due to the amount of unknowns associated with marbled murrelets, such as no identified limiting factors, or the amount of old-

growth currently being used; it is not known what the actual effects of timber harvest will be. Fragmentation or increased edge effects may also reduce habitat capability for marbled murrelets.

If the current population assumptions found in the Distribution and Population section are correct, and if it is assumed that nesting habitat is the limiting factor for the population, then a reduction in nesting habitat may have a proportional effect on the population. If so, then after a 17 percent reduction in potential nesting habitat (Table 2), the Chasina Project Area might still support 1,569 or more birds. This assumes no influence caused by fragmentation or increased edge, and a uniform use of the available, suitable habitat.

In summary, the Chasina Project may effect marbled murrelets, but the extent of this effect is unknown.

Table 2
Acres and Percent of Wildlife Habitats Proposed for Harvest, by Alternative

		Alt. 1		Alt. 2		Alt. 3		Alt. 4		Alt. 5		Alt. 6	
Habitat	Existing Acres	Acres Cut	% Chg	Acres Cut	% Chg	Acres Cut	% Chg	Acres Cut	% Chg	Acres Cut	% Chg	Acres Cut	% Chg
Old Growth	24,178	0	0	1,160	5	1,900	8	2,891	12	2,261	9	4,225	17

SOURCE: Matson 1996. Data derived from GIS data base.

Murrelet nests are exceedingly difficult to find, and no intensive nest searches in Chasina harvest units are planned. However, if any nests are discovered, they will be protected by a minimum 30 acre buffer to maintain microclimatic conditions around the nest tree. If research, monitoring,or administrative studies uncover new information addressing murrelets in Southeast Alaska, they will be reviewed for use in and/or replacement of this guideline.

QUEEN CHARLOTTE GOSHAWK (*Accipiter gentilis laingi*)

Distribution and Population

The American Ornithologists Union (AOU) recognizes two subspecies of the northern goshawk in North America, *Accipiter gentilis atricapillus* and *A.g. laingi*, the Queen Charlotte goshawk (AOU 1957). Taverner (1940) first described the darker plumaged Queen Charlotte goshawk as a distinct race occurring in the coastal temperate rainforests of the Queen Charlotte Islands and Vancouver Island, British Columbia. Webster (1988) found that the Queen Charlotte goshawk occurred from Vancouver Island north to the Taku River near Juneau. The northern goshawk is identified as a species of concern throughout its range.

On May 9, 1994, the USFWS received a petition from the Southwest Center for Biological Diversity and numerous co-petitioners, to list the Queen Charlotte goshawk as endangered pursuant to the Endangered Species Act. On August 19, 1994, the USFWS found that the information presented by the petitioners together with the information in USFWS files was substantial and indicated that listing may be warranted. Therefore, a status review of the species was initiated. After seeking publics and reviewing all the available information on the goshawk, a finding was issued June 28, 1995, that protection under the Endangered Species Act is not warranted at this time for the Queen Charlotte goshawk.

The goshawk is a wide-ranging forest raptor that generally occurs in low densities, from 2.4 pairs (Central Alaska, McGowan 1975) to 11.0 pairs (Arizonia, Crocker-Bedford and Cheney 1988) per 100 square kilometers, although population densities in Southeast Alaska may be much lower (Crocker-Bedford 1992). The most recent estimates of the goshawk population in Southeast Alaska range from 100 to 381 pairs (USDA

Forest Service 1991a; Crocker-Bedford 1994) to 100 to 800 pairs (Alaska Interagency Goshawk Committee, Report of June 30, 1994).

As of December, 1991, the Alaska Region Status Report for USDA Region 10 Sensitive Species Consideration, stated, "The two factors causing concern for the goshawk in southeast Alaska are: low current population numbers and potential declines in habitat capability. Both factors expose the Queen Charlotte Goshawk to increased susceptibility to local or widespread extirpation. A review of goshawk observations during the past decade has revealed 16 confirmed or probable nesting sites in southeast Alaska. "There was a high association between goshawk nesting stands and higher volume/tree size stands: 8 (50%) of the 16 sites were clearcut or planned for timber harvest until the goshawk nests were found" (Iverson unpubl. rep.). This relationship has also been established in other parts of the goshawks range. Recent results of studies within the range of the Queen Charlotte goshawk(ADF&G 1993, Titus et al. 1994), indicated a greater frequency of relocations of radio-tagged goshawks in mature and old-growth forest. Of 18 nest trees for which habitat attributes were characterized, 16 were in old-growth and two were in second growth trees greater than 90 years of age. Of 661 radio relocations, over 90% were in habitat classified as volume class 4 or greater and 68% were in habitats classified as volume class 5 or greater (Titus et al. 1994).

Home ranges have been reported to be 2,000 to 3,200 hectares (Reynolds 1983). These home ranges may include a mosaic of habitat types, with a strong preference for mature forest with flight space beneath the canopy (Reynolds 1989, USDA Forest Service 1990). Home range size is strongly dependent upon quality of the foraging habitat and prey availability (Kenward 1982). Titus et al. 1994 reported breeding period home ranges for 16 adult goshawks in Southeast Alaska as large as 19,613 hectares and year-round home ranges as large as 114,728 hectares.

A recent review of the Queen Charlotte goshawk summarized habitat use as follows (Crocker-Bedford 1994):

"Analyses of habitat use have shown similar results throughout the geographical range of the northern goshawk in the United States. Home ranges include stands of large trees for nesting, as well as for greater abundance of some prey. The higher canopy provided by large trees, along with sparser than normal shrubs and small trees, appears to facilitate goshawk flight and prey capture. Closed canopies appear to provide preferred microclimate in the nesting stand, increased productivity of some important prey species, and reduced competition and predation by open-forest raptors. A literature review indicated that goshawk densities tend to decrease with the amount of timber harvest, and that goshawks may sometimes be impacted by forest fragmentation. In Southeast Alaska 92 percent of the relocations on radio-tagged goshawks were in old-growth forests having over 8 mbf/ac. Old-growth having over 20 mbf/ac was most preferred."

Goshawks generally select forest stands with large trees on gentle slopes at lower elevations for nesting and foraging (Reynolds 1989, USDA Forest Service 1990). Foraging habitat is generally characterized by a greater diversity of age classes and structural characteristics (e.g., snags, woody debris) than nesting areas; foraging areas also comprise the largest percentage of goshawk home ranges (Reynolds et al. 1991). Goshawks feed primarily on ground-dwelling birds and small animals.

Goshawk sensitivity to timber harvest has resulted in management recommendations to protect nest site integrity (USDA Forest Service 1990, USDA Forest Service 1991a, USDA Forest Service Alaska Region 1992, USDA Forest Service 1994). Other management recommendations recognized the importance of the foraging area within the post-fledging area (Crocker-Bedford 1990, USDA Forest Service 1991, and USDA Forest Service Alaska Region 1992). There is now widespread recognition of the importance of most foraging habitat, including areas far from the nesting site (Reynolds 1989,USDA Forest Service 1990, Crocker-Bedford 1990, Crocker-Bedford 1991, Crocker-Bedford 1992, USDA Forest Service 1992, Marshall 1992).

Twenty-one goshawk nest areas were documented in Southeast Alaska with activity between 1990 and 1993 (Titus et al. 1994). In 1994, a total of 33 historic and current sites with at least one documented nest were

checked; active nests were located at 21 of these sites (ADF&G 1994). Goshawk nesting has not been observed in the Chasina Project Area.

Inventories were conducted in the Project Area during the summer of 1995 by Craig Ranger District personnel utilizing the Alaska Region Goshawk survey protocol. Goshawk calls were broadcast from more than 326 call stations in approximately 68 harvest units. There were not any responses to the calls and no confirmed sightings. More than 84 biologist days were spent surveying the Project Area. Although the inventory techniques were among the best available, there is a high likelihood that nests were missed even in the stands that were sampled (Kimmel, J. T. and R. H. Yahner 1990; Kennedy et al., in press; and ADF&G 1992 Goshawk Survey Progress Report). Any pairs of goshawks missed to date will not be protected unless chance observations are made during the timber sale layout process.

On August 18, 1992, the Alaska Region issued Interim Management Guidelines for the goshawk on the Tongass National Forest. A review and evaluation of the guidelines will occur. All units laid out for the Final EIS will follow the management guidelines for goshawks in effect at the time of layout.

Effects of Chasina Proposed Action on Populations or Habitat

None of the alternatives propose timber harvest of known nest areas or designated post fledging areas. Alternatives that harvest the most timber would have the greatest potential to effect goshawks, therefore the Chasina Project may effect Queen Charlotte goshawks.

Any pairs of goshawks not discovered prior to timber harvest may be affected if the harvest units correspond to key stands of habitat. Any goshawk nest found prior to harvest will be protected utilizing the current goshawk management guidelines, which normally provide more careful management only within the post fledging area.

HARLEQUIN DUCK (*Histrionicus histrionicus*)

Distribution and Population

The harlequin duck's range is divided into two separate and distinct regions: eastern and western. The eastern range embraces Iceland, parts of Greenland, and Labrador, with the winter range extending as far south as New Jersey. The western range includes northeast Siberia west to the Lena River, east to the Kamchatka Peninsula and the Commander Islands and north to the Arctic Circle, then across the Bering Sea to the Aleutian Islands, much of interior Alaska, and south to northwest Wyoming and central California (Bellrose 1980). For Alaska, the harlequin duck has been reported as a fairly common year-round resident, and at one season or another, has been recorded over much of the State, except the Arctic coast (Gabrielson and Lincoln 1959).

Available evidence indicates that the species breeds locally over much of southern Alaska, probably the Aleutians, and north to Anaktuvuk Pass. All ornithologists who have worked during the spring and summer months in the Alexander Archipelago and other parts of Southeast Alaska, have commented upon the numbers of these ducks, frequently summarizing their observations by stating that they were common or abundant (Gabrielson and Lincoln 1959).

Harlequins nest along inland rivers and streams. Usually the nest site is usually 6 feet (but up to 60 feet) from water (DeGraff et al. 1991). The site chosen usually has shelter overhead - a recess in a stream bank, or among rocks, or under shrubs, trees, or stranded debris. Occasionally the nest is in an open area, but under

shrubbery of other low vegetation, or even on a stream bar. There is no proof that harlequins nest in tree cavities (Bellrose 1980; Armstong et al. 1983; Kortright 1962; Godfrey 1979; Palmer 1975). During the winter the harlequin duck is common to abundant in the coastal waters of Southeast Alaska, Prince William Sound, Cook Inlet, the bays of the Alaska Peninsula, the Aleutians and the Pribilofs (Gabrielson and Lincoln 1959). Preferred winter habitat is reported to be areas along surf-pounded rocky coasts -- not in sheltered bays and fjords, but instead where water is one to two fathoms deep and turbulent, and where bottom fauna abounds (Palmer 1975).
Harlequins feed on molluscs, crustaceans, insects, fish, and echinoderms (Bellrose 1980).

Effects on Population or Habitat

Nesting habitat for the harlequin duck occurs along inland rivers and streams. Riparian habitats along all rivers and streams on the Forest will be managed according to the Stream and Lake Protection management prescription or a more restrictive management prescription (such as when a stream or river is in a Wilderness Area). The Stream and Lake Protection Management Prescription is on pages 3-180 to 3-205 of the TLMP Revision SDEIS Proposed Revised Forest Plan and have been adopted by the Chasina Project. Nesting habitat requirements are expected to be maintained. Since winter habitat occurs in the marine environment, in areas of high surf and rocky beaches, no effect on harlequin ducks is anticipated with any alternatives of the Chasina Project.

OLIVE-SIDED FLYCATCHER (*Contopus borealis*)

Distribution and Population

The olived-sided flycatcher breeds in wooded regions from central Alaska east to Newfoundland and south to northern Baja California and central Arizonia in the west, central Minnesota and northern Michigan in the Central States, and North Carolina and Tennessee in the East. The species winters in South America.

It inhabits open coniferous forests and forest edges along lakes. streams, and muskegs (Bent 1942). Godfrey (1979) described the habitat of the species as "Burntlands with standing dead trees, bogs, lakeshores with water-killed trees, lumbered areas, and other clearings in woodland". DellaSala et al. (1994) noted that the species was often observed using habitats associated with lakes and muskegs during a breeding bird study on central Prince of Wales Island.

Effects of Chasina Proposed Action on Population or Habitat

Riparian habitats along all lakes, rivers, and streams on the Forest will be managed according to the Stream and Lake Protection management prescription or a more restrictive precription (such as when a stream or river is in a Wilderness Area). The Stream and Lake Protection management prescription is on pages 3-180 to 3-205 of the Proposed Revised Forest Plan in the TLMP Draft Revision (1991b) and has been adopted by the Chasina Project.

Upland habitat value for the olive-sided flycatcher may improve due to logging in the Chasina Project. Created openings will produce greater edge, and if reserve trees and snags are retained, flycatcher habitat could actually be improved. Therefore, though the Project may affect olive-sided flycatcher habitat, the effect is likely to be positive.

SPOTTED FROG (*Rana pretiosa*)

Distribution and Population

The spotted frog occurs in or near fresh water and is believed to range south from the Taku river, other transboundary rivers and some islands of Southeast Alaska and British Columbria (Holmberg, April 17, 1992). Spotted frogs have been documented in the Stikine River basin (Waters 1992). Presence of spotted frogs on Prince of Wales Island has not been confirmed.

Effects of Chasina Proposed Action on Population or Habitat

Riparian habitats along all lakes, rivers and streams on the Forest will be managed according to the Stream and Lake Protection management prescription or a more restrictive management prescription (such as when a stream or river is in a Wilderness Area). The Stream and Lake Protection Management Prescription is on pages 3-180 to 3-205 of the TLMP Revision SDEIS and have been adopted by the Chasina Project. With implementation of Stream and Lake Management Prescriptions, no effects on the spotted frog is anticipated by the Chasina Project, even if they are found to occur within the Project Area.

BULL TROUT (*Salvelinus confluentus*)

Distribution and Population

Although the range of Bull trout in the contiguous United States has become greatly restricted in recent times (Goetz as cited in Has and McPhail 1991), it still exists as far south as the Oregon-California border, north through Canada and in the Yukon River system in Alaska (Haas and McPhail 1991). Bull trout are largely confined to interior regions throughout their distribution, only reaching the Pacific coast in the Puget Sound area of Washington and in the Fraser River drainage in British Columbia (Haas and McPhail 1991). Since bull trout have only been observed in the interior drainage of other major river systems, it is not likely that bull trout occur in the streams of the Chasina Project Area.

Effects of Chasina Proposed Action on Population or Habitat

Riparian habitats along all lakes, rivers and streams on the Forest will be managed according to the Stream and Lake Protection management prescription or a more restrictive management prescription (such as when a stream or river is in a Wilderness Area). The Stream and Lake Protection Management Prescription is on pages 3-180 to 3-205 of the TLMP Revision SDEIS and have been adopted by the Chasina Project. With implementation of Stream and Lake Management Prescriptions, no effects on the bull trout is anticipated by the Chasina Project, even if they are found to occur within the Project Area.

PLANT SPECIES of CONCERN

Aster yukonensis

This taxon is known from an area near Bettles, north of the Yukon River, and from the north side (continental side) of the St. Elias Range, north of Yakutat (Murray and Lipkin 1987). The plant would not be expected to occur in the Project Area (DeMeo 1992).

Searches for candidate and sensitive plants were made by interdisciplinary-trained teams and trained botanists of the Project Area. No observations of this species were made. Since *Aster yukonensis* is not known to occur in the Project Area, there are no anticipated effects of the Chasina proposed action on its population or habitat.

Calamagrostis crassiglumis

Disjunct populations of this grass are known along the Pacific coast from Kodiak Island south to northern California. The plant grows in marshy wet areas, muddy areas near lakes, beach meadows, and rocky soil. This plant does not grow in muskeg habitats (Muller 1991). Based on collections in Alaska and British Columbia, the plant may be found in the Project Area.

No observations of this species were made during field reconnaissance. Furthermore, this species is not known to occur in forested areas; therefore, no direct effects from timber harvest are anticipated. Changes in drainage due to roading or other activities may affect habitat and populations of the plant (DeMeo 1992). Stream, estuary, and lakeshore buffers should provide adequate protection for this plant.

Carex lenticularis var. dolia

This sedge is known to be in the coastal mountains of southern Alaska and may be expected to occur in the Project Area (DeMeo 1992).

No observations of this species were made during field reconnaissance. This species is not known to occur in forested areas; therefore, there are no effects anticipated from timber harvest (DeMeo 1992).

Montia bostockii

This small herb occurs in alpine and subalpine meadows in the Brooks Range through the Wrangell-St. Elias Range (Muller 1991). It would not be expected to occur in the Project Area.

No observations of this species were made during field reconaissance. Since *Montia bostockii* is not known to occur in the Project Area, there are no effects anticipated from Chasina timber harvest activities (DeMeo 1992).

IV. SENSITIVE SPECIES EVALUATION

OSPREY (Pandion haliaetus)

Ospreys occur in low numbers in Southeast Alaska during the spring/summer nesting period from late April through August. They are believed to overwinter in Mexico and Central America. All documented osprey nest sites occur outside the Chasina Project Area. There are eight documented osprey nest sites and four known nesting pairs at Thomas Bay, Wrangell Narrows near Finger Point, and near the mouth of McCormick Creek on Wrangell Island (Hughes, undated, as cited in Forest Service 1991b). Nest trees in these areas consist of broken-top spruce (live or dead) and snags of western hemlock in hemlock/spruce forest types near streams or coastal beaches. Historically, the Southeast Alaska population of osprey appears to have remained stable but low. It is unknown why osprey occur in relatively low numbers in this region, but available nest sites and foraging areas do not appear to be limiting factors.

Effects of Chasina Proposed Action on Population or Habitat

The Chasina Project is not expected to affect nesting osprey as no known nest sites occur in the Project Area and availability of nesting and foraging areas does not appear to be a factor limiting population growth. In addition, minimal or no effect on preferred osprey habitat are expected from project activities as uncut buffers will be maintained near streams, lakes, and coastal areas. If nests are discovered in the Project Area, standard and guidelines outlined in the Forest Plan will be followed.

TRUMPETER SWAN (Cygnus buccinator)

The swan is the largest waterfowl species in the world. Its present range is only a vestige of the once vast region of North America that it frequented in both summer and winter (Bellrose 1980). Trumpeter swans breeding in Alaska spend the winter along the Pacific Coast from the Alaska Peninsula to the mouth of the Columbia River, where they take advantage of open waters of saltwater estuaries and freshwater lakes and rivers. Trumpeter swans are present in the Project Area primarily during the fall and early spring migration periods and during winter. The only documented nesting trumpeter swans occur north of the Project Area at Yakutat (19 pairs). Nests in Southeast Alaska occur in wetlands and/or riparian habitat along streams, rivers, lakes and ponds.

No high use resting stops/wintering areas for swans have been found in the Project Area, however during the 1995 winter swan survey 3 swans were observed in Dora Bay.

Effects of Chasina Proposed Action on Population or Habitat

Most timber harvest activity will not be in conflict with the TLMP Draft Revision (1991a) standards and guidelines for trumpeter swans, since swans are not present in the Project Area when most of the timber harvest activity occurs. There is a potential for conflict when swans are migrating through or returning to wintering areas. Noise from road construction, timber harvest, and hauling of logs could frighten swans away

from their preferred resting and feeding areas. However, limiting timber harvest operations to periods when swans are not present (April 1 through November 1) would mitigate these potential impacts. While swans have been observed in Dora Bay during the last survey, Kitkun Bay and the head of South Arm are two potential areas that swans could use as wintering areas.

GOOSE GRASS SEDGE (Carex lenticularis **var.** dolia)

This sedge is known to occur in the coastal mountains of Alaska and British Columbia and the Rocky Mountains from Jasper, B.C., south to Glacier National Park, Montana. Its range in Alaska is limited to the alpine of coastal Southcentral and Southeast Alaska and the Aleutian Islands. There are nine documented occurrences in Alaska (Forest Service 1994), in Southeast, at the Mendenhall Glacier, Bailey Bay on Cleveland Peninsula, and the Chickamin Glacier. This species is not known to be found within the Project Area. Its habitat is wet alpine meadows and bare edges of snowbeds.

No observations of this species were made during field reconnaissance of harvest units and roads. This species is not known to occur in forested areas; therefore, there are no effects anticipated from timber harvest.

Edible Thistle (Cirsium edule)

This regionally endemic thistle species is distributed primarily along coastal Oregon, Washington, and British Columbia and barely reaches southern most Southeast Alaska. The only documented occurrence is near Hyder in interior Southeast Alaska near the border of Canada (Forest Service 1994). It is not expected to occur in the Project Area. Its habitat in Alaska is characterized as wet meadows and open woods along glacial streams.

No observations of this species were made during field reconnaissance and no sightings have been documented in the Project Area. Since timber harvest activities generally avoids wet meadows and stream margins where this species would be expected to be found, no direct effects from timber harvest are anticipated even if the species were to occur in the Project Area.

DAVY MANNAGRASS (Glyceria leptostachya)

This grass species is distributed from Southeast Alaska to central California. Its distribution in Alaska is limited to central and southern Southeast Alaska. It is known to occur in only two documented locations: near Wrangell Alaska and on Prince of Wales Island, however it is easily overlooked and likely to be more widespread in Southeast (Forest Service 1994).

No observations of this species was made during field reconnaissance and there are no documented sightings of this plant in the project area. No impacts to this population as a result of road construction and timber harvest are anticipated because stream and lakeshore buffers should provide adequate protection for this plant.

WRIGHT FILMY FERN (Hymenophyllum wrightii)

This fern species occurs in coastal areas of Southeast Alaska and British Columbia. Three sightings have been documented in Alaska and are limited to Biorka and Mitkof Islands (Forest Service 1994). It is unknown if the species occurs in the Project Area. This species appears to prefer humid shaded boulders, cliffs, tree

trunks, and damp woods in the wettest maritime regions. In Alaska, it has been found in small populations on the base of trees and rock outcrops in damp woods.

No observations of this species were made during field reconnaissance and no sightings have been documented in the Project Area. Since Wright filmy fern is not known to occur in the Project Area, no effects are anticipated from Chasina timber harvest activities. However, potentially undetected specimens could be affected by the removal of trees from damp woods of the Project Area.

TRUNCATE QUILLWORT (Isoetes truncata)

This rooted aquatic species is known from a few widely isolated populations on Vancouver Island and southcentral Alaska on the Copper River Delta (Forest Service 1994). It is unknown if this species occurs in the Project Area. Truncate quillwort occurs in shallow water of lakes and streams.

No observations of this species were made during field reconnaissance and no sightings have been documented in the Project Area. Furthermore, due to its rooted aquatic nature, this species does not occur in forested areas; therefore, no direct effects from the Chasina Project are anticipated. Even if the species does exist in the Project Area, stream and lakeshore buffers should provide adequate protection for this plant.

CALDER LOVAGE (Liqusticum calderi)

This plant species occurs in British Columbia and Southcentral and Southeast Alaska. Documented occurrences in Alaska are limited to two disparate areas at Kodiak Island and Dall Island (just west of Prince of Wales Island) in Pleistocene refugia on limestone substrate (Forest Service 1994). It is unknown if this species occurs in the Project Area. Calder lovage occurs on rocky cliffs, open boggy or rocky slopes, and edges of coniferous forests. In Alaska it is known from alpine meadow habitats and edges of subalpine mixed coniferous forest.

No observations of this species were made during field reconnaissance and no sightings have been documented in the Project Area. Since Calder lovage is not known to occur in the Project Area, no effects are anticipated from Chasina timber harvest activities. However, potentially undetected specimens could be affected by the removal of timber along subalpine coniferous forest edges.

CHORIS BOG ORCHID (Platanthera chorisana)

In Alaska, this bog orchid species is limited to the Aleutian Islands and southern coastal areas (Forest Service 1994). Eight occurrences have been documented in Alaska, primarily from the Aleutians. Elsewhere in Alaska, reported sightings are disjunct and infrequent and are limited to areas near Juneau (primarily Chichagof Island) and Prince William Sound. Recent botanical surveys on Revillagigedo Island have revealed a minimum of 12 populations of this species. This species has been found in the Project Area near harvest unit 679-363 adjacent to a small drainage.

With the increasing number of observations, it is possible that this species is not as rare as previously thought. With more surveys planned in the Project Area, it is likely that more populations of Choris bog orchid will be found. The two plants located in the Project Area are outside of unit boundaries and are not in any planned road locations, so no impacts are expected. It is also possible that timber harvest and road construction activities may inadvertingly destroy some individual plants that have not been observed.

BOG ORCHID (Platanthera gracilis)

This species of bog orchid is limited to a small geographic range in southern most Southeast Alaska and adjacent British Columbia (Forest Service 1994). Two documented sightings have been made in Alaska near Pearse Canal and on Dall Island. It is unknown if this species occurs in the Project Area. This plant occurs in wet open meadow habitat. It is undetermined whether the taxon of this species is distinct; if it is not, it may be more common than previously believed (Forest Service 1994).

No observations of this species were made during field reconnaissance of harvest units and roads. This species is not known to occur in forested areas; therefore, there are no effects anticipated from timber harvest or road construction activities.

LOOSE-FLOWERED BLUEGRASS (Poa laxiflora)

The distribution of this grass species is scattered between Southeast Alaska and Oregon. Seven sightings have been documented in Southeast Alaska near Hoonah, Sandborn Canal at Port Houghton, and Admiralty Island (Forest Service 1994). It is not known if this species occurs in the Project Area. Loose-flowered bluegrass is associated with moist, open lowland woods and open-forest meadows.

No observations of this species were made during field reconnaissance and no sightings have been documented in the Project Area. Since loose-flowered bluegrass is not known to occur in the Project Area, no effects are anticipated from Chasina timber harvest activities. However, potentially undetected specimens could be affected by the removal of timber from harvest units encompassing open lowland woods and open-forested meadows.

STRAIGHT-BEAK BUTTERCUP (Ranunculus orthorhynchus)

This species of buttercup is distributed from coastal southern Southeast Alaska to adjacent British Columbia and Vancouver Island (Forest Service 1994). It is unknown if the species occurs in the Project Area. It occurs in moist, open lowland meadows and other moist open habitats.

No observations of this species were made during field reconnaissance and no sightings have been documented in the Project Area. Since straight-beak buttercup is not known to occur in the Project Area, no effects are anticipated from Chasina timber harvest activities. Even if this species does occur in the Project Area, direct effects due to removal of timber from Chasina harvest units are not anticipated to be significant as preferred open, moist habitats are generally avoided for timber harvest.

QUEEN CHARLOTTE BUTTERWEED (Senecio moresbiensis)

This species of butterweed is limited to the Queen Charlotte Islands of British Columbia and to disjunct populations in southeastern Alaska and northwestern Vancouver Island (Forest Service 1994). Five occurrences have been documented in Alaska on Prince of Wales, Baker, Coronation, and Dall Islands. It is not known if this species occurs in the Project Area. Queen Charlotte Butterweed occurs in shady wet areas and bogs of montane to alpine habitats, to open, rocky or boggy slopes, and in open, rocky heath or grass communities (Douglas 1982 in Forest Service 1994).

No observations of this species were made during field reconnaissance and no sightings have been documented in the Project Area. Since Queen Charlotte butterweed is not known to occur in the Project Area, no

effects are anticipated from Chasina timber harvest activities. Even if this species does occur in the Project Area, direct effects due to removal of timber from Chasina harvest units are not anticipated to be significant as preferred open, moist habitats are generally avoided for timber harvest.

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VI. DOCUMENTATION OF CORRESPONDENCE WITH OTHER AGENCIES

June 5, 1987:	U.S. Fish and Wildlife Service memorandum, recommended changing the Prince of Wales flying squirrel from a Category 2 candidate species to a Category 3c candidate species.
Dec. 4, 1990:	NMFS publishes final rule in the Federal Register listing the Steller sea lion as a threatened species.
March 20, 1991:	Interagency Wildlife Technical Committee Meeting.
April 2-4, 1991:	Marbled murrelet workshop sponsored by the USFWS.
Sept. 5, 1991:	USF&W letter critique of USDA Forest Service Region 3 Management Guidelines for the Nothern Goshawk in the Southwestern Region, (56 FR 122, 28853).
Dec. 17, 1991:	Status report on R10 sensitive species candidates.
Jan. 28, 1992:	Forest Service letter to NMFS requesting list of T & E species in proposed project areas.
Feb. 6, 1992:	NMFS letter listing humpback whale and Steller sea lion as being within the central Prince of Wales project area.
March 5, 1992:	Letter from USFWS concerning T & E in Lab Bay, Prince of Wales, Polk and Revilla timber sale areas.
April 8, 1992:	Phone conversation with NMFS about the status of recovery plans for whales and the Steller sea lion, and proposed regulations for approaching marine mammals.
April 8, 1992:	Letter to USFWS requesting updated list of T & E and proposed and candidate species.
April 9, 1992:	Phone conversation with the Alaska Natural Heritage Program to check on any changes in the listing of candidate plants.
April 15, 1992:	Letter from USFWS updating the list of threatened, endangered, and candidate species likely to occur on the Forest.
April 17, 1992:	Phone conversation with the USFWS clarifying that the Aleutian Canada goose is not likely to occur on the Forest.
June 24, 1992:	USDA Forest Service memo describing current status of goshawk call survey.
Aug. 13, 1992:	USF&W letter critique of USDA Forest Service Region 3 Management Guideline Revision for the Northern Goshawk in the Southwestern Region, (57 FR 119, 27424).
Aug. 18, 1992:	Interim habitat recommendations for the northern goshawk, USDA Forest Service, Alaska Region, Juneau.

Nov. 24, 1995:	Letter from USFWS in response to the Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for timber harvest in the Chasina Project Area.
Jan. 29, 1996:	Meeting with ADF&G and USFWS on Chasina Project old-growth retention strategy.

Appendix E

LTF Site Guidelines/ LTF Evaluation

EVALUATION OF LOG TRANSFER FACILITIES
Using 404(b)(1) Guidelines of the Clean Water Act

CHASINA PROJECT

US Forest Service
Tongass National Forest
Ketchikan Area
Ketchikan Alaska

June 12, 1996

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Project area Map.....ii

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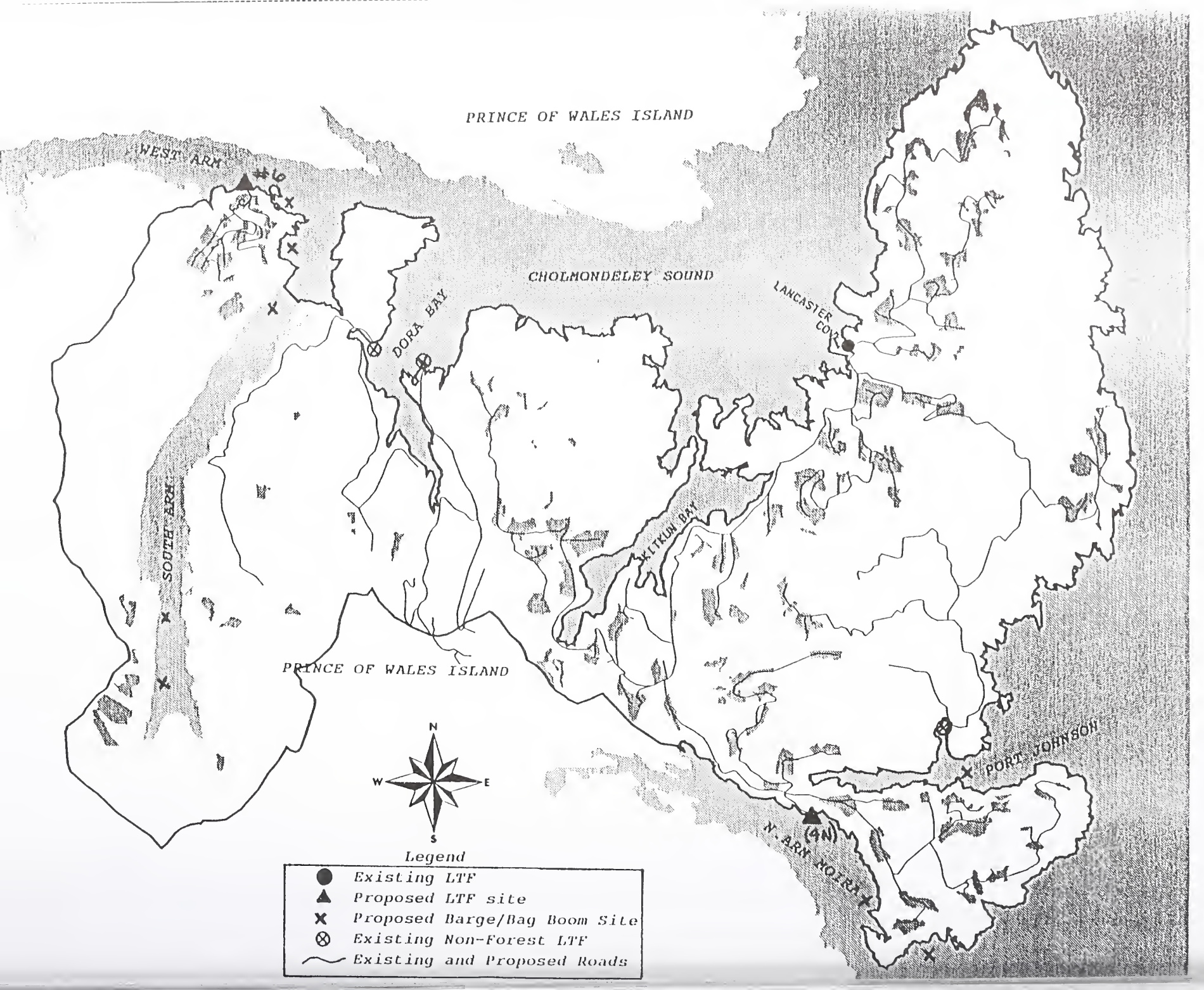
Proposed N. Moira Site #4N..... 1

Helicopter Transfer Sites #1 thru 5..... 4

Proposed W. Cholmondeley Site #6..... 6

ATTACHMENTS

A. N.Arm Moira Site #4N
B. Site Map of N.Arm Moira sites investigated
C. W. Arm Cholmondeley site #6


PRINCE OF WALES ISLAND
WEST ARM
#6
CHOLMONDELEY SOUND
DORA BAY
LANCASTER COVE
KITKUN BAY
SOUTH ARM
PRINCE OF WALES ISLAND
PORT JOHNSON
(4N)
N. ARM MOIRA
N
W
E
S
Legend
Existing LTF
Proposed LTF site
Proposed Barge/Bag Boom Site
Existing Non-Forest LTF
Existing and Proposed Roads

EVALUATION OF LOG TRANSFER FACILITIES
Using 404(b)(1) Guidelines of the Clean Water Act.

Guidelines governing siting, construction, operation and monitoring of log transfer facilities (LTF) under 40 CFR 230.12(a)(3)read as follows:

> V. Log Transfer Facilities Siting, Construction, Operation, and Monitoring
>
> A. Site log transfer facilities in locations which will best avoid or minimize potential impacts on water quality, aquatic habitat and other resources. During site analysis, cooperate with State and Federal agencies per stipulations in Memoranda of Understanding or cooperative agreements to assemble required data and evaluate alternatives.
>
> Evaluate alternatives using the 404(b)(1) guidelines to determine if "(i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences; or (ii) The proposed discharge will result in significant degradation of the ecosystem; or (iii) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem; or (iv) There does exist sufficient information to make a reasoned judgement as to whether the proposed discharge will comply with these guidelines.

Log transfer facilities under the various action alternatives for the CHASINA project were evaluated on the basis of items i through iv noted above. That evaluation is presented in subsequent discussions.

Specific Log Transfer (LTF) site locations are contained in Attachments A and C.

CONSTRUCTION OF N. MOIRIA LTF SITE #4N

Includes constructing the LTF to a Low Angle Ramp system with associated uplands log sorting area.

Evaluation of Alternatives.

Determine if; **(i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences.**

Description:

The N. Arm Moira area has no existing LTFs at this time. The site (#4N) is aproximately 2 miles northwest of the mouth of N.Arm where it connects with Moira Sound. The site would be developed as a Low-Angle Ramp system costing approximately $80,000 to construct.

N. Arm Moira LTF would serve approximately 5400 acres of land in the Port Johnson/N. Arm area of which approximately 914 acres are proposed for harvest.

Alternatives to construction of N. Arm Moirat LTF(#4N):

No action alternative: No harvest of timber resources in Port Johnson-N.Arm Moira area.

Relocate LTF

Construct road connections to existing, active LTF's.

Sub-altenatives to the proposed LTF construction.

Dry land transfer from bulkhead to barge

Chain Slide system.

A-frame lift off system.

Other alternatives not demonstrated as practicable were not considered any further. For example; pile supported bridge ramp and barge or special slide out ramps etc.

Evaluation between alternatives

No Action: The No Action alternative would eliminate the need for an LTF, thus producing no discharge of any pollutants. Accordingly, access to 4500 acres of timber resources would be forgone.

Relocate LTF: Relocation of the LTF to another site in the area would create the same or greater impacts to other undisturbed portions of the aquatic habitat. Haul and fuel use would be more than that of the proposed site. There were five other sites evaluated in the immediate area(2N, 3N, 5N, 6N, 7N, see attachment B for locations), and only this site was deemed acceptable by the NMFS and USFWS divers. Accessing these other sites would require additional road which in turn would cause greater impacts to the ecosystem other than the aquatic habitat.

Construct Road Connections to Existing, Active LTF's: Road connections to an existing LTF at Lancaster Cove is feasible. The connection to the Lancaster Cove road system and LTF would require construction of an additional 3 miles of road. The road as planned would be entirely within a Habitat Conservation Area so would access no addtional volume for the project or for any near future projects. Esitmated cost of the additional road is approximately $600,000. The cost of construction of the N.Moira LTF is approximately $200,000 including the associated road access and log sorting areas. The road connection to Lancaster Cove road system and LTF would disturb an additional 27 acres of productive land, but would disturb less acreage of marine habitat.

Sub-alternatives to the proposed LTF modification

Dry Land Bulkhead to Barge Transfer: Use of the site for barge loading would require construction of a 3 to 5 acre sort yard, relocation of the access road, and expansion of the existing fill with bulkhead to deep water.

The barge system will effect 4 to 6 acres of forested wetlands, 0.2 acres of additional fill in aquatic habitat and cost approximately $1,000,000. Haul and fuel use would be about the same as modification of the existing site to an A-frame system.

Chain Slide System: Modification to a chain slide would require relocation of the access road. This would effect about 1.5 acres of forested wetlands and about 0.2 acres of aquatic habitat associated with fill and slide structure. Road and LTF construction costs would be about $627,000. Fuel use and haul would be the same as the proposed action.

Determine if; **(ii) The proposed discharge will result in significant degradation of the aquatic ecosystem**

N.Moira #4N is an new site that has moderate bathymetric characteristics with strong tidal currents that will provide good flushing characteristics.

The proposed Low Angle Ramp system is capable of transferring logs without any significant entry velocity. This capability will minimize discharge of bark into the aquatic ecosystem.

Surface runoff into the aquatic ecosystem will be kept to a minimum by insloping the road and LTF surface, collecting and settling runoff, and periodic surface cleanup of bark and woody debris. (40CFR 122.27 Silvicultural Point Sources; applicable to State NPDES programs,see 40 CFR 123.25).

Determine if; **(iii) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem**

The existing site will adapt to a Low Angle Ramp system with the least amount of impacts to both the uplands and aquatic ecosystem. The Low Angle Ramp system is capable of eliminating entry velocities.

Surface runoff into the aquatic ecosystem will be kept to a minimum by insloping the road and LTF surface, collecting and settling runoff, and periodic surface cleanup of bark and woody debris. (40CFR 122.27 Silvicultural Point Sources; applicable to State NPDES programs,see 40 CFR 123.25).

The National Marine Fisheries Service and U.S. Fish and Wildlife Service have found the site to be acceptable. See attached National Marine Fisheries and US Fish and Wildlife agencies report.

The construction of the new site into a Low Angle Ramp system is preferred to relocation or modification into other systems.

A low-angle ramp is the most economical for such intermittent operations. The next most economical method is the single A-Frame system.

HELICOPTER TRANSFER SITES #1H thru #8H (Port Johnson/N.Arm Moira and South Arm of Cholmondely)

Includes flying logs from the harvest area directly to a barge.

Evaluation of Alternatives.

Determine if; **(i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences.**

Description:

Helicopter transport of logs from the harvest area directly to a barge eliminates need for constructing roads on steep ground and allows the economic harvest of isolated forest lands.

There are alternatives in the environmental impact statement that will utilize some but not all of these sites and there are alternatives that utilize all the helicopter barge sites.

Alternatives to the proposed Helicopter Transfer System.

No action alternative: No harvest of timber resources in the tributary areas.

Connect isolated harvest areas to existing or planned road systems.

Evaluation between alternatives

No Action: The No-Action alternative would eliminate the need for reactivating the LTF, thus producing no discharge of any pollutants. Accordingly, access to 600 acres of timber resources would be forgone.

Helicopter Transfer: (Preferred Alternative) Helicopter transport directly to a barge will eliminate use of any fill in the aquatic ecosystem.

Connect isolated areas to existing road systems. Connecting to Lancaster Cove and or W.Arm Cholmondeley road systems would require numerous miles of road construction across existing slide areas, have massive rock cuts, and very steep adverse haul grades making haul practicability marginal. A connection to W.Arm Cholmondeley site would cost $1,200,000 and would disturb about 27 acres of productive land. Numerous mass failures would be expected. This alternative would increase fuel use and haul costs $37,000. The total additional construction costs for connecting to, and using W.Arm Cholmondely proposed LTF would be about $1,482,000 more than helicopter transfer. From a visual standpoint, high impacts would be expected due to massive full bench cuts and mass failures.

Determine if; **(ii) The proposed discharge will result in significant degradation of the aquatic ecosystem**

Helicopter transfer of logs from the harvest area directly to a barge minimizes impacting the shallow high value marine habitat near the shoreline. The need for fill in the aquatic ecosystem is eliminated by using this system.

Landing logs on a barge will eliminate discharge of bark into the aquatic ecosystem. Periodic cleaning of the barge deck would minimize surface runoff into the aquatic ecosystem.

Determine if; **(iii) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem**

The Helicopter transfer system will create the least amount of impacts to both the uplands and aquatic ecosystem. The need for filling in aquatic habitat and surface runoff control is eliminated by use of this system.

The use of helicopter transfer for the isolated S.Arm Cholmondely and Port Johnson areas is preferable to developing additional land LTF's or connecting to other LTF sites as it will minimize both upland and aquatic ecosystem impacts and costs. Development of roads and the LTF would be uneconomical for the amount of timber volume being harvested at this area.

Surface runoff into the aquatic ecosystem will be kept to a minimum by periodically cleaning the barge deck of bark and woody debris.

CONSTRUCTION OF W.ARM CHOLMONDELEY LTF SITE #6

Analysis of this site was completed in the Final Environmental Impact Statement for the 1989-1994 Operating Period for the Ketchikan Pulp Company Long Term Sale Area. Portions of this analysis is included in attachmnent C, the remainder of the analyais is included by reference.

ATTACHMENT A

NORTH ARM MOIRA
SITE 4-N

Location:	NE1/4,NE1/4, Sec. 14, T.78 S. R.88 E. Graig A-1 55° 06' 49"N 132° 06' 07"W
Proposed Volume:	10-15 MMBF for total rotation.
Facility type:	Low-Angle (12%) ramp.
Upland Area:	Upland area has moderate slopes. Excavation would be about 7,500 cy.
Rafting Area:	Ample room for rafting adjacent to the site. The site does not lie within any area designated for forestry activities in the AK POW PLAN.
Camp Facilities:	It is expected that the float camp would be located in Cannery or Nowiskay Cove. Cannery Cove has a stream that may serve as a water supply. The commute distance would be about 1.5 miles.
Access:	The access road would have up to 16% grades. It does not appear feasible to connect the area served by Site 4-N, to the existing Lancaster Cove LTF as the terrain between 3-N and 4-N is extremely steep.
Fisheries:	There are no cataloged fish streams near the site.
Marine Conditions:	The beach slopes to seaward at 12% for about 200 ft. The footprint would be minimal both in the marine and uplands as the bathymetric and topographical characteristics are almost ideal for such a structure. This site has been impacted by past log storage activities. Because of past impacts, this site was preferred.
Other Environmental:	Initial landings could be made at the site.
Tideland Plans:	Site 4-N is not within any area managed for forestry activities.

Recommendations:

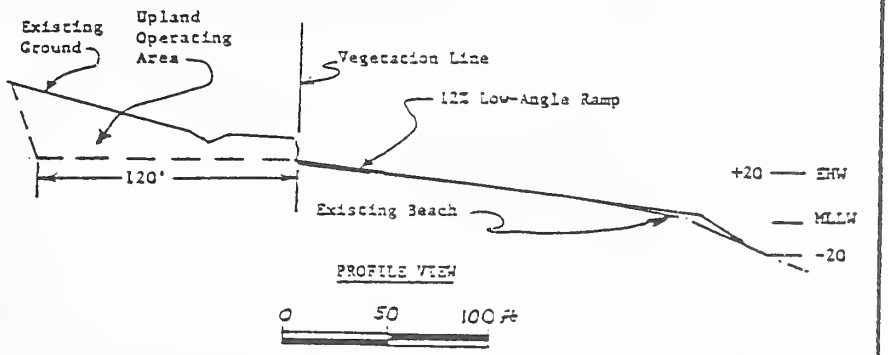
Site 4-N is recommended for use due to the following:

The site is preferred from a marine biological standpoint, primarily because the area has been impacted in the past. Further use would retain impacts to currently impacted areas.

The facility will create the smallest footprint on both the marine and upland areas.

Site 4-N requires the least amount of access road in serving the tributary area.

It is further recommended that the feasibility of a road link to Lancaster Cove LTF be explored on the ground. This may eliminate the need for an LTF for the tributary area.



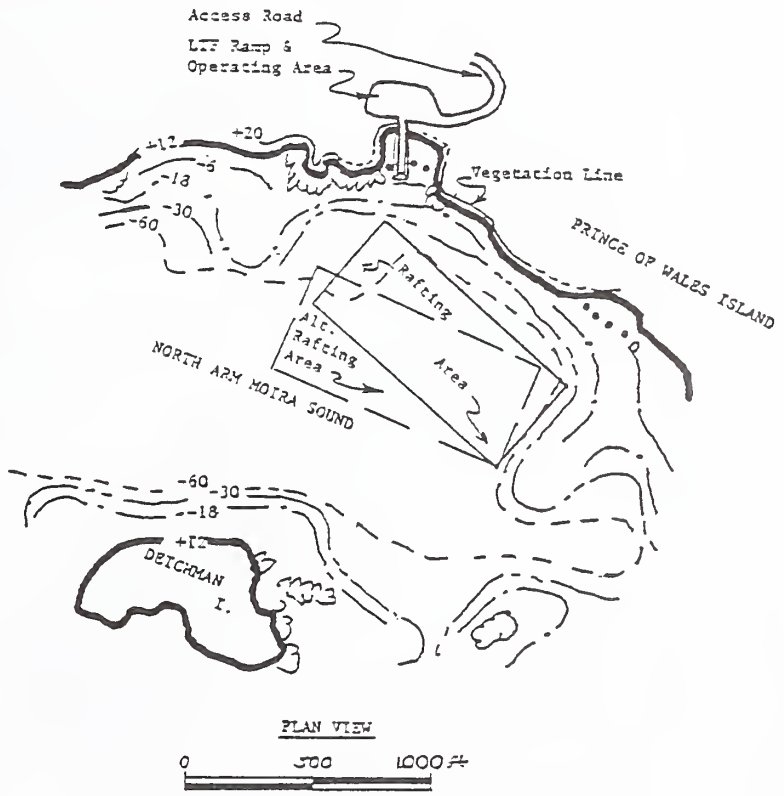
SOUNDINGS

EHW to EW;(Exposed beach)
-12% for 125'

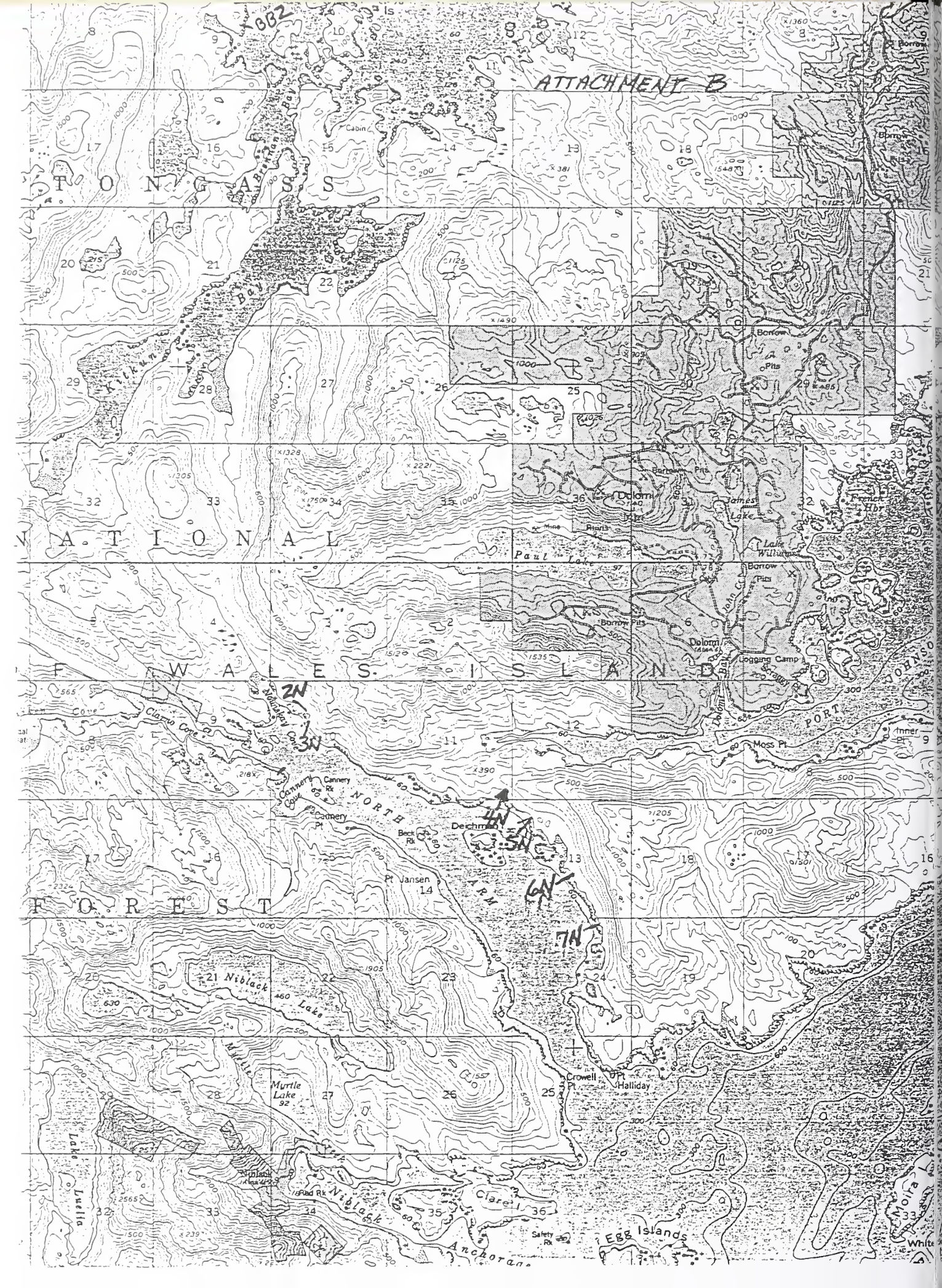
11	30	36	49	50+
66	108	121	155	184

AREAS AFFECTED (Prelim.Footprint)

Marine habitat	0.2 ac.
Upland area	0.5 ac.

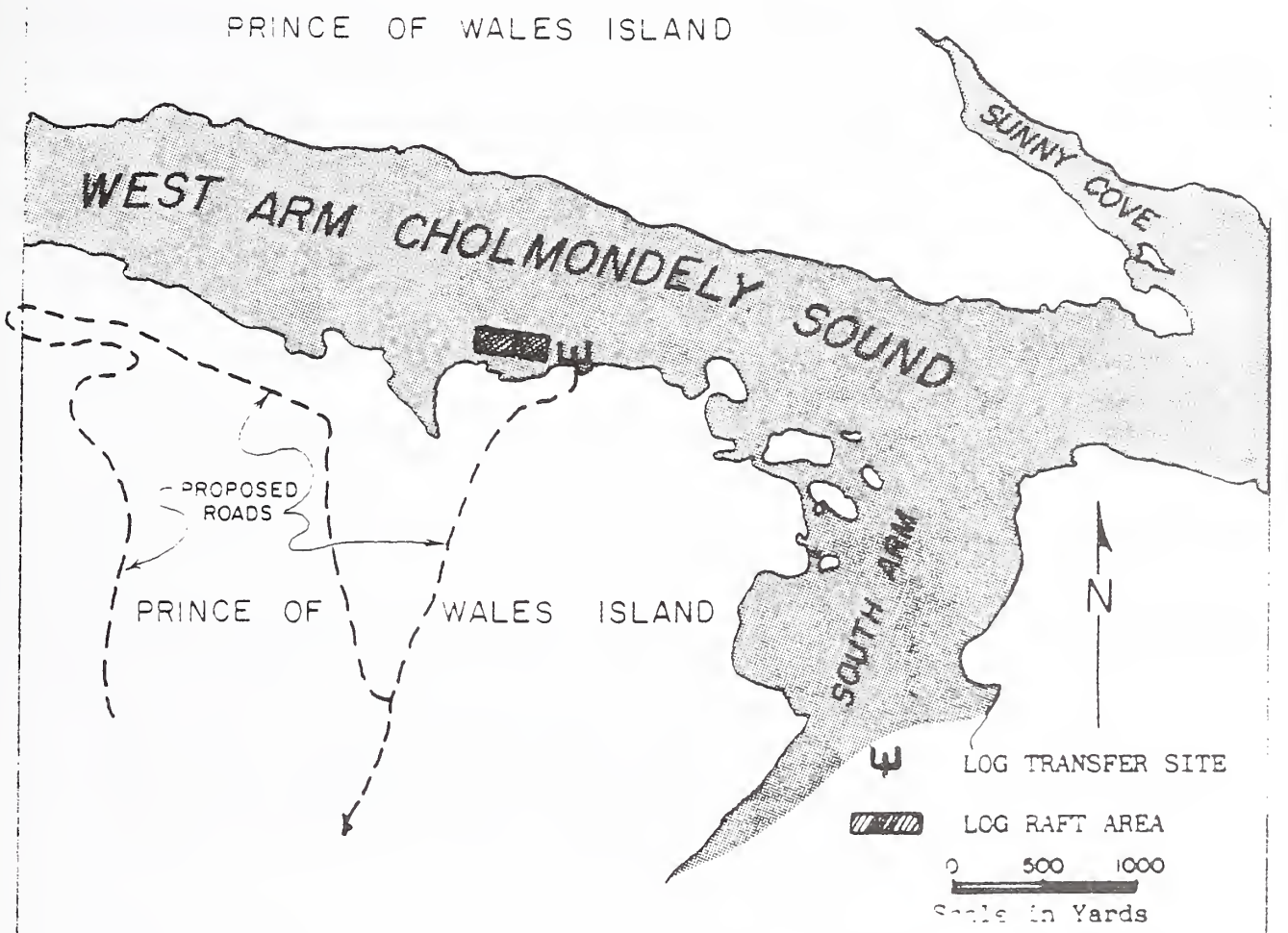


	MOIRA SOUND	NORTH ARM MOIRA 4-N Low-Angle Ramp LTF


ATTACHMENT B
T O N G A S S
N A T I O N A L
F O R E S T
W A L E S I S L A N D
Paul Lake
Lake Williams
James Lake
Dolomi
Borrow Pits
Loggers Camp
Moss Pt
Inner Pt
Cannery Cove
Cannery Pt
Cannery Rk
Beck Rk
Deichmann
Pt Jansen
ARM
Niblack Lake
Myrtle Lake
Crowell Pt
Pt Halliday
Clarence I
Egg Islands
Safety Rk
Anchorage
Port Johnson
Moira Sd
White
1N
2N
3N
4N
5N
6N
7N

Attachment C

CHOLMONDELY #6
PROPOSED L.T.F.



	ALTERNATIVE							
	1	2	3	4	5	6	7	8
Used		X			X			
Reconstruction								
SYSTEM TYPE								
Double A-Frame								
Slide		X			X			
Float-Off								

West Arm Cholmondeley #6

Legal Location:	- NE1/4SE1/4, Sec.27, T.76S.R.86E., CRG A-1. - Latitude 55° 14' 53" N Longtitude 132° 18' 55" W
Operations:	- Site is suitable for an A-frame facility. - Rafting and booming of logs is possible on the south side of West Arm Cholmondeley near the proposed site.
Development:	- Rock source for facility is available on site. - Beachhead mobilization will need to be accomplished in a shallow area just to the west of the site.
Access:	- Road access is intended to come from the west around the abandoned Cholmondeley town site. - Route location around the Cholmondeley town site should avoid private land holdings in the cove.
Marine Conditions:	- Site is acceptable by the NMFS and USF&WS for use as an A-frame site. - Site bathemetry exhibits good flushing and excellent depth in front of the wall and no conflicts with site productivity.
Environmental:	- There are no conflicts with eagle nesting habitat at the proposed site.
Recommendations:	- Since this site access the timber on the south side of West Arm Cholmondeley from Big Creek to the west to South Arm to the east. - In order to harvest timber from this area without this facility, it would require a road and a bridge to be built across Big Creek and traverse a vertical wall on the east side of the Big Creek outlet which would be prohibitively expensive.

LOG TRANSFER SITE EVALUATION

New log transfer sites were selected and evaluated with respect to the interagency Log Transfer Siting Guidelines. Additionally, these guidelines were applied to the existing log transfer sites to examine their suitability under current guidelines.

Following are evaluations of the individual sites in accordance with the interagency siting guidelines.

SITE NAME: Cholmondeley (West Arm #6) TLMP VCU NO: 674

CORPS OF ENGINEERS PERMIT ID:

SITE STATUS: Proposed

GUIDELINE ID	ATTF GUIDELINES	EVALUATION OF SITE AGAINST GUIDELINES
S1	Proximity to Rearing and Spawning Areas: Siting of log transfer and log raft storage facilities within 300 feet of the mouths of anadromous fish streams, or in areas known to be important for fish spawning or rearing, is normally prohibited.	Meets this guideline.
S2	Protected Locations: Log transfer and log raft storage facilities should be sited in weather protected waters with bottoms suitable for anchoring and with at least 20 acres for temporary log storage and log booming.	Ample rafting area. Bottom unknown. Protected from the weather.
S3	Upland Facility Requirements: Log Transfer Facilities (LTF) generally should be sited in proximity to at least 5 acres of relatively flat uplands. There should also be a body of water sufficient to provide a minimum of 60 lineal foot facility face.	Sufficient upland area for small sort area. Sufficient facility face available.
S4	Safe Access to a Facility from the Uplands: To provide safe access to the LTF adjoining log sort yard, the facility should be sited where access roads to the facility can maintain a grade of 10 percent or less for trucks and 4 percent for specialized equipment.	Moderate approach grades to site.
S5	Bark Dispersal: LTFs should be sited along or adjacent to straits and channels or deep bays where currents may be strong enough to disperse sunken or floating wood debris. Siting LTFs in embayments	Site has good dispersal characteristics. Site has very steep shore and is adjacent to very deep channel. Site has good tidal currents.

GUIDELINE ID	ATTF GUIDELINES	EVALUATION OF SITE AGAINST GUIDELINES
	with sills or other natural restrictions to tidal exchange should be avoided.	
S6	Site Productivity: Sites for in-water storage and/or transfer of logs should be located in areas having the least productive intertidal and subtidal zones.	Estimated ranges of impact: Low is 1; High is 10 1
S7	Sensitive Habitats: LTFs and log raft storage areas should not be sited on or adjacent to (i.e., near enough to effect) extensive tideflats, salt marches, kelp or eelgrass beds, seaweed harvest areas, or shellfish concentration areas.	Estimated ranges of impact: Low is 1; High is 10 1
S8	Safe Marine Access to Facilities: Log rafting and storage facilities should be safely accessible to tug boats with log rafts at most tides and on most winter days.	True of this site.
S9	Storage and Rafting Logs, log bundles, or log rafts should be stored in areas where they will not ground at low tide. A minimum depth of 40 feet or deeper measured at Mean Lower Low Water (MLLW) for log raft storage is preferred.	Ample water depth.
S10	Avoid Bald Eagle Nest Trees: Site LTFs to avoid bald eagle nests. No project construction or operations should be closer than 330 feet to any bald eagle nest tree.	No nest trees.
C1	LTF Design: LTF design should be the least environmentally damaging, practicable alternative. Factors to be considered in selection of design alternatives include: 1) economic practicality; 2) facility requirements; 3) physical site constraints; 4) timber volumes to	Site has suitable characteristics for an A-frame life off system.

GUIDELINE ID	ATTF GUIDELINES	EVALUATION OF SITE AGAINST GUIDELINES
	be transferred (site usage and duration); 5) total potential effects on biota and water quality (including biological productivity and sensitivity); and 6) other potential uses of the site and facility.	
C2	Fill Structures: Fill structures shall be designed and constructed to prevent erosion, pollution, and structural displacement.	
C3	Timing of In-water Construction: In-water construction, blasting, and/or filling associated with LTF sites should be timed to limit adverse impacts to marine and estuarine fishery resources and avoid conflicts with other user groups.	
C4	Bark Accumulation Management: The siting, design, and operation of the LTF and contiguous collateral upland facilities shall utilize best practicable procedures and methodologies to control intertidal and submarine accumulations of bark.	
C5	Sold Waste Management: Solid waste including wood and other solid waste generated from the LTF, contiguous and other collateral facilities shall be routinely removed from the LTFs and adjacent facilities and disposed of at an approved upland solid waste disposal site.	
C6	Bark Accumulation: The regulatory agency(ies) will impose an interim intertidal and submarine threshold bark accumulation level. When accumulations exceed the threshold level, cleanup--if any--will occur	

GUIDELINE ID	ATTF GUIDELINES	EVALUATION OF SITE AGAINST GUIDELINES
	at the discretion of the permitting agency(ies). The interim threshold bark accumulation level is described as 100 percent coverage exceeding both 1 acre in size and a thickness greater than 10 cm (3.9 inches) at any point.	
C7	Bundle Speed: The speed of log bundles entering receiving waters should be the slowest practicable speed achievable. Decisions on the allowable transfer system that can be used will occur on a site-specific basis during the permitting process.	Entry velocity will be controlled by the operator and equipment.
C8	Surface Drainage Management: The design, construction, and operation of LTFs, contiguous sort yards, and/or log storage yards shall utilize practicable procedures for control of surface water runoff from facilities.	
C9	Control of Hydrocarbons: The log transfer system and adjacent sort yard handling equipment shall be operated and maintained to minimize petroleum and lubricating products from entering waters.	
C10	On-shore Log Storage: Where feasible, preference must be given to on-shore storage and barging of logs.	
C11	Facility Maintenance and Reclamation: The permittee shall maintain the structure or work authorized in good condition and in reasonable accordance with the approved plans and drawings. If and when the permittee desires to abandon the authorized activity herein, unless such abandonment is part of a transfer procedure by	

GUIDELINE ID	ATTF GUIDELINES	EVALUATION OF SITE AGAINST GUIDELINES
	which the permittee is transferring its interests to a third party, the permittee must restore the area to a satisfactory condition.	

ALASKA TIMBER TASK FORCE

SITING GUIDELINES

LOG TRANSFER SITE EVALUATION

Log transfer sites were selected and evaluated with respect to the interagency Log Transfer Siting Guidelines. Following are the siting guidelines used to evaluate both new and existing Log Transfer Sites.

SITING GUIDELINES

Proximity to Rearing and Spawning Areas: Siting of log storage and transfer facilities within 300 feet of mouths of anadromous fish streams or in areas known to be important for fish spawning or rearing is normally prohibited.

Protected Locations: Log transfer and log raft storage facilities should be sited in weather protected waters with bottoms suitable for anchoring and at least 20 acres for temporary log storage and booming.

Upland Facility Requirements: Log transfer facilities should be sited near at least five acres of relatively flat uplands. There should also be a body of water sufficient to provide a minimum of 60 linear foot facility face.

Safe Access to a Facility From the Uplands: To provide safe access to the log transfer facility and adjoining log sort yard, the facility should be sited where access roads can maintain a grade of 10 percent or less for trucks and four percent specialized equipment.

Bark Dispersal: Log transfer facilities should be sited along or adjacent to straits and channels or deep bays where currents may be strong enough to disperse sunken or floating wood debris. Siting log transfer facilities in embankments with sills or other natural restrictions to tidal exchange should be avoided.

Site Productivity: Sites for in-water storage and/or transfer of logs should be located in areas having the least productive inter-tidal and sub-tidal zones.

Sensitive Habitats: Log transfer facilities and log raft storage areas should not be sited on or adjacent to extensive tide flats, flat marshes, kelp, or eel grass beds, seaweed harvest areas, or shellfish concentration areas.

Safe Marine Access to Facilities: Log rafting and storage facilities should be accessible to tug boats with log rafts at most tides and on most days.

Storage and Rafting: Logs, log bundles, or log rafts should be stored in areas where they will not ground at low tide. A minimum depth of forty feet or deeper, measured at mean lower low water (MLLW), for log raft storage is preferred.

Avoid Bald Eagle Nest Trees: Site log transfer facilities to avoid Bald eagle nests. No project construction or operations should be closer than 330 feet to any Bald Eagle nest tree.

Additional interagency guidelines concerning LTF site construction and monitoring are included in Appendix E.

Existing sites were examined in accordance with the interagency siting guidelines to evaluate current adequacy. The existing sites do not necessarily meet all guides. For instance, several sites within the Project Area may be located within 300 feet of an anadromous fish stream.

An additional log transfer siting guideline dealing with recreation and visual considerations is as follows: log transfer facilities should be located where conflicts with existing boat anchorages will be minimized and views of the facility will be considered as seen from travel routes and use areas.

Appendix F

Best Management Practices (BMPs)

APPENDIX F

BEST MANAGEMENT PRACTICES

The Clean Water Act of 1972 (Public Law 92-500), as amended in 1977 (Public Law 95-217) and 1987 (Public Law 100-4), has the objective to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The Act provides a means to protect and improve the quality of the water resources and maintain their beneficial uses. Sections 208 and 319 of The Clean Water Act recognizes the need for control strategies for nonpoint source pollution.

To provide environmental protection and improvement emphasis for water and soil resources and water-related beneficial uses, the National Nonpoint Source Policy (December 12, 1984), the Forest Service Nonpoint Strategy (January 29, 1985), and the USDA Nonpoint Source Water Quality Policy (December 5, 1986) were developed. Best Management Practices (BMPs) were recognized as the primary control mechanisms for nonpoint sources of pollution on National Forest System lands.

In order to comply with State water quality standards, the Forest Service applies BMPs that are "consistent" with the Alaska Forest Resources and Practices Act (1990) and other applicable State water quality regulations. In recognition of the importance of BMPs, they are identified as one portion of the "Forest Service Alaska Region Water Quality Management Plan," as described in the USDA Forest Service/Alaska Department of Environmental Conservation Memorandum Of Agreement (1992).

Best Management Practices may be defined as: land management methods, measures or practices intended to minimize or reduce water pollution including, but not limited to, structural and nonstructural controls, operation and maintenance procedures, other requirements, and scheduling and distribution of activities. The site-specific application of the BMPs is designed with the consideration of geology, land type, hydrology, soil type, erosion hazard, climate, cumulative effects, and other factors in order to fully protect and maintain soil, water, and water-related beneficial uses, and to prevent or reduce nonpoint source pollution.

Direction for the use of BMPs on National Forest System lands in Alaska is included in Chapter 10 of FSH 2509.22, The Soil and Water Conservation Handbook. The handbook describes the application, monitoring, evaluation, and refinement of these BMPs. The following list is a summary of the BMPs, and includes the practice number (from the Soil and Water Conservation Handbook), name, and objective of the Best Management Practices used in the Alaska Region.

No.	PRACTICE	OBJECTIVE
12.1	Cumulative Watershed Effects Analysis	To determine the Cumulative Watershed Effects (CWE) on the beneficial uses of water caused by multiple land management activities, distributed over both time and space.
12.2	Soil and Water Resource Monitoring and Evaluation	To determine the effects of land management activities on water quality through a well planned, coordinated, and executed monitoring program; to ensure the health and safety of water users; to evaluate BMP effectiveness; and to determine the adequacy of data, assumptions, and coefficients in the Forest Plans.
12.3	Watershed Improvement Planning and Implementation	To improve degraded watershed conditions, to minimize soil erosion, and to improve water availability or quality.
12.4	Floodplain Analysis and Evaluation	To protect floodplain values and avoid, where possible, the long and short-term adverse impacts to soil and water resources associated with the occupancy and modification of floodplains.
12.5	Wetlands Analysis and Evaluation	To maintain wetland functions and avoid adverse soil and water resource impacts associated with the destruction or modification of wetlands.
12.6	Riparian Area Designation and Protection	To maintain and protect water quality and fisheries habitat, and to minimize adverse effects on riparian areas from logging and other land disturbing management activities.
12.7	Streambank Protection	To minimize sediment production from streambanks and structural abutments in natural waterways.
12.8	Oil Pollution Prevention and Servicing/Refueling Operations	To prevent contamination of surface and subsurface soil and water resources from spills of petroleum products.
12.9	Oil and Hazardous Substances Pollution Contingency Planning.	To minimize contamination of waters from accidental spills of oil and hazardous substances by use of appropriate contingency plans.
12.10	Control of Activities Under Special Use Permit	To protect surface and subsurface soil and water resources from physical, chemical, and biological pollutants resulting from activities that are under special-use permit.
12.11	Management by Closure to Use	To exclude activities that could result in significant damage to facilities which would result in impaired water quality.
12.12	Water Well Construction and Management	To protect ground water resources from contamination transmitted from water well developments.

No.	PRACTICE	OBJECTIVE
12.13	Administrative Site Planning and Management	To locate, design, and manage administrative sites to prevent water pollution and other adverse environmental and health impacts.
12.14	Planning, Design and Management of Utility Corridors	To assure that construction and maintenance of powerlines and pipelines are accomplished in a manner that minimize effects on water quality.
12.15	Management of Sanitary Facilities and Sanitary Guidelines for Temporary Camps	To prevent water pollution and health risks from the disposal of sewage at Forest Service Facilities, facilities under special use permit, and temporary camps of all types.
12.16	Control of Solid Waste Disposal	To protect surface and subsurface soil and water resources from nutrients, bacteria, and chemicals associated with solid waste disposal.
12.17	Revegetation of Disturbed Areas	To protect water quality by minimizing soil erosion.
13.1	Timber Sale Planning	To incorporate soil and water resource considerations into Timber Sale Planning.
13.2	Timber Harvest Unit Design	To ensure that timber harvest unit design will secure favorable conditions of water flow, or maintain water quality and soil productivity, and minimize soil erosion and sedimentation.
13.3	Designating Water Quality Protection Needs on Sale Area/Unit Release Maps	To delineate the location of protection areas and to ensure their recognition, proper consideration, and protection on the ground.
13.4	Limiting the Operating Period of Timber Sale Activities	To minimize soil erosion and sedimentation by ensuring the Purchaser conducts operations, including erosion control work and road maintenance, in a timely manner.
13.5	Protection of Potentially Unstable Areas	To protect potentially unstable areas and to avoid triggering mass movements of the soil mantle and resultant erosion and sedimentation.
13.6	Determining Suitability for Tractor Logging	To protect water quality from degradation by identifying those areas where tractor yarding techniques are appropriate, and by establishing guidelines for the yarding operation.
13.7	Determining Suitability for Shovel Logging	To protect soil resources and water quality from degradation by identifying those areas where shovel yarding techniques are appropriate, and by establishing guidelines for the yarding operation.
13.8	Protection of Alluvial Soils With Shallow Organic Layers	To protect alluvial soils and the overlying organic layer to maintain soil productivity.

No.	PRACTICE	OBJECTIVE
13.9	Suspended Log Yarding in Timber Harvesting	To protect water quality by protecting the soil from excessive disturbance and accelerated erosion and to maintain the integrity of the riparian area and other sensitive watershed areas where it is determined that ground-based machinery is inappropriate.
13.10	Log Landing Location and Design for Erosion Control	To design and construct landings to minimize soil erosion and water quality degradation.
13.11	Erosion Prevention and Control Measures During Timber Sale Operations	To ensure that the Purchaser's operations shall be conducted reasonably to minimize soil erosion and water quality degradation.
13.12	Revegetation of Areas Disturbed by Harvest Activities	To establish a vegetative cover on disturbed sites to minimize erosion and sedimentation.
13.13	Erosion Control Structure Maintenance	To ensure that constructed erosion control structures are stabilized and working effectively.
13.14	Acceptance of Erosion Control Measures Before Sale Closure	To assure the adequacy of required erosion control work on timber sales.
13.15	Wetland Protection During Timber Harvest	To avoid damage to the ground cover, soil, and water quality in wetlands during timber harvest.
13.16	Stream Channel Protection (Implementation and Enforcement)	1) To protect the natural flow of streams; (2) to provide unobstructed passage of stormflows; (3) to reduce sediment and other pollutants from entering streams; and (4) to restore the natural course of any stream as soon as practicable, if the stream is diverted as a result of timber management activities, (5) to maintain channel integrity and stability for protection of aquatic habitat and other beneficial uses, and (6) to avoid adverse changes in the natural stream temperature regime.
13.17	Nonrecurring "C" Provisions For Soil and Water Quality Protection	To insert nonrecurring (Special) "C" provisions into the Timber Sale Contract to protect soil and water resources, where standard "B" or "C" provisions do not apply or are inadequate to protect watershed values.
13.18	Modification of the Timber Sale Contract	To seek an Environmental Modification of the timber sale contract if new circumstances or conditions indicate that the timber sale will cause irreparable damage to soil, water, or watershed values.
13.19	Reforestation Requirement	To promote prompt reforestation and to mitigate watershed disturbance on areas with limited regeneration potential.

No.	PRACTICE	OBJECTIVE
14.1	Transportation Planning	To assure soil and water resource considerations in Transportation Planning activities.
14.2	Location of Transportation Facilities	To locate roads and trails with minimal soil and water resource impact.
14.3	Design of Transportation Facilities	To design roads and trails with minimal soil and water resource impact.
14.4	Location and Design of Log Transfer Facilities (LTF's).	To locate and design LTF's with minimal soil, water and biological impact.
14.5	Road and Trail Erosion Control Plan	Design to minimize and mitigate erosion, sedimentation, and resulting water quality degradation prior to the initiation of construction and maintenance activities. Ensure compliance through effective contract administration and timely implementation of erosion control measures.
14.6	Timing Restrictions for Construction Activities	Where effective minimize erosion by conducting operations during low risk periods.
14.7	Slope Stabilization to Minimize Mass Failures	To reduce sedimentation by minimizing the chances for road-related mass failures, including landslides and embankment slumps.
14.8	Slope Stabilization to Minimize Surface Erosion	To minimize soil erosion from cutslopes, fillslopes, and the travelway.
14.9	Control of Road Drainage	To minimize the erosive effects of concentrated water and the degradation of water quality by proper design and construction of road drainage systems and drainage control structures.
14.10	Pioneer Road Construction	To minimize sediment production associated with pioneer road construction.
14.11	Timely Erosion Control Measures on Incomplete Roads and Streamcrossing Projects	To minimize erosion of and sedimentation from disturbed ground on incomplete projects.
14.12	Control of Excavation and Sidecast Material	To reduce sedimentation from unconsolidated excavated and sidecast material caused by road construction, reconstruction, or maintenance.
14.13	Control of Construction in Riparian Areas	To minimize the adverse effects of road and trail construction on riparian areas.
14.14	Control of In-Channel Operations	To minimize stream channel disturbances and related sediment production.

No.	PRACTICE	OBJECTIVE
14.15	Diversion of Flows Around Construction Sites	To minimize downstream sedimentation.
14.16	Streamcrossings on Temporary Roads	To prevent temporary roads from damaging streamcourses, degrading water quality, or obstructing fish passage.
14.17	Bridge and Culvert Design and Installation	To minimize the impact on water quality and fisheries resources from the installation of bridges and culverts.
14.18	Development of Borrow Pits, Gravel Sources and Quarries	To minimize sediment production from borrow pits, gravel sources, and quarries, and limit channel disturbance in those gravel sources suitable for development in floodplains.
14.19	Disposal of Right-of-Way and Roadside Debris	To ensure that debris generated during road construction is kept out of streams and to prevent slash and debris from subsequently obstructing channels.
14.20	Road Maintenance	To maintain all roads in a manner which provides for soil and water resource protection by minimizing rutting, failures, sidecasting, and blockage of drainage facilities.
14.21	Road Surface Treatment to Prevent Loss of Materials	To minimize the erosion of road surface materials and consequently reduce the likelihood of sediment production.
14.22	Access and Travel Management	Reduce the potential for erosion and sedimentation from road surface disturbance during periods of high runoff and spring thaw conditions.
14.23	Snow Removal Controls	To minimize the impact of snow melt on road surfaces and embankments and to reduce the probability of sediment production resulting from snow removal operations.
14.24	Obliteration of Temporary Roads	To reduce sediment generated from temporary roads and return land to production by obliterating them at the completion of their intended use.
14.25	Surface Erosion Control at Facilities	To minimize the amount of erosion and sedimentation at facilities.
15.1	Pesticide Use Planning	To incorporate water quality and hydrologic considerations into the Pesticide Use Planning Process.
15.2	Follow Pesticide Label and EPA Registration Directions	To prevent water contamination and risk to humans from pesticide application, cleaning of equipment, and disposal of pesticide containers.
15.3	Pesticide Application Monitoring and Evaluation	To determine and document that pesticides have been applied safely and to provide an early warning for any contamination of water or non-target areas or resources.

No.	PRACTICE	OBJECTIVE
15.4	Pesticide Spill Contingency Planning	To reduce contamination of water from accidental pesticide spills.
15.5	Protection of Water Quality, Wetlands, and Riparian Areas During Pesticide Application	To minimize the risk of pesticide contamination of surface or subsurface waters, riparian areas, wetlands, and other non-target areas.
16.1	Recreation Facilities Planning	To protect soil and water resources through appropriate planning, design and location of recreational facilities.
16.2	Providing Safe Drinking Water Supplies	To protect water quality and provide safe drinking water to Forest Service facilities such as campgrounds, picnic grounds, trailheads, Visitor Information Centers, winter sport areas, and developed roadside facilities.
16.3	Assuring Proper Sanitation and Water Supplies For Special Use Facilities and Administrative Sites	To protect the quality of water both consumed by and discharged from facilities under Special Use Permit, and from administrative sites not on public water and sewer systems.
16.4	Trail Construction and Maintenance	To minimize soil erosion and water quality problems originating from trails and their drainage structures.
16.5	Management of Off-Road Vehicle Use	To control Off-Road Vehicle (ORV) use which is causing soil erosion and adverse effects on water quality and to identify corrective measures.
16.6	Protection of Water Quality Within Developed Recreation Areas	To protect water quality by regulating the discharge and disposal of potential pollutants.
16.7	Protection of Water Quality Within Dispersed Recreation Areas	To avoid slope erosion and trampling in riparian and wetland areas, and consequent loss of vegetation and degradation of water quality.
17.1	Mining Site Conditions, Planning, and Design	To incorporate soil and water resource considerations into the planning process for mining and mineral exploration operations.
17.2	Placer Mining	To incorporate soil and water resource considerations into the planning process for mining plans of operation for placer mining.
17.3	Hard Rock Mining	To incorporate soil and water resource considerations into the planning process for mining plans of operation for lode mining operations.

No.	PRACTICE	OBJECTIVE
17.4	Permits and Administration of Geophysical Operations	To protect the quality of surface and ground water from degradation resulting from geophysical activities on National Forest System lands.
17.5	Site Closure and Rehabilitation	To incorporate soil and water resource considerations into the planning process for mining plans of operation
17.6	Abandoned Mine Land Reclamation	To reduce erosion and water quality degradation by sediment and toxic substances from abandoned mined lands and mining facilities through reclamation of these lands.
18.1	Fish and Wildlife Habitat Improvement Planning	To incorporate soil and water resource considerations into planning for fish and wildlife improvement projects.
18.2	Development of Groundwater-fed Spawning and Rearing Habitat from Gravel Extraction and Other Sites	To minimize sediment production from gravel extraction and/or ground reshaping during and following construction of groundwater-fed spawning and rearing streams and ponds.
18.3	In-Channel Excavation or Disturbance During Fish and Wildlife Habitat Improvement Projects	To minimize stream channel disturbances and related sediment production during and after development of fish and wildlife habitat improvement projects.
18.4	Ground Fertilization for Wildlife Habitat Improvement	To minimize impacts to water quality in stream systems and lakes within and adjacent to areas being fertilized.
18.5	Lake Fertilization for Fish Habitat Improvement	To limit eutrophication in Forest lakes.
19.1	Fire and Fuel Management Activities and Prescriptions	To reduce flooding and erosion by reducing the frequency, intensity, and destructiveness of wildfire.
19.2	Protection of Water Quality Through Prescribed Burning Prescriptions	To maintain soil productivity, minimize erosion, and prevent ash, sediment, nutrients, and debris from entering surface waters, through the formulation of the burning prescription.
19.3	Minimizing Watershed Impacts from Fire Suppression Efforts	To avoid watershed impacts in excess of that which would be caused by the fire itself.
19.4	Stabilization of Fire Suppression Related Watershed Damage	To stabilize all areas that have had their erosion potential significantly increased, or their drainage pattern altered by suppression related activities.
19.5	Emergency Watershed Rehabilitation Following Wildfires	To minimize the loss of soil and on-site productivity, the deterioration of water quality, and threats to life and property, both on-site and off-site.

Appendix G

LSTA Units not in Unit Pool

Appendix G

Units Not Considered for Analysis After Paper Plan Development and Initial Field Evaluations With Reason for exclusion (P=Paper Plan, F=Field Review).

VCU Unit #	Acres	When Removed	Drop	Defer	Adjac. Requi.	Stream/ Estuary Buffer	High Hazard Soils	Land Con- veyed	Econ./ Unmerch- antable
677-303	5	F	5				5		
677-304	80	P	80				80		
677-306	10	P	10				10		
677-307	15	P		15	15				
677-308	40	P		40	40				
677-310	15	P		15					15
677-312	30	P		30	30				
677-313	70	P		70	70				
677-314	25	P		25	25				
677-316	60	P		60	60				
677-317	45	P		45					45
677-318	25	F	25				25		
677-320	10	F	10				10		
677-321	10	P		10					10
677-322	10	P		10					10
677-323	50	P		50	50				
677-326	30	P		30	30				
TOTAL	**530**		**130**	**400**	**320**		**130**		**80**
678-302	20	P		20	20				
678-304	20	P		20	20				
678-306	25	P		25	25				
678-307	20	P		20	20				
678-308	30	P		30	30				
678-309	25	P		25	25				
678-311	40	P		40	40				
678-313	15	P		15	15				
678-315	40	P		40	40				
678-317	20	P		20	20				
678-318	25	P		25	25				
678-320	20	P		20	20				
678-321	30	P		30	30				
678-322	30	P	30				30		
678-323	10			10	10				
678-326	40	F	40				40		
678-327	30	F	30				30		
678-328	10			10	10				
678-329	10	P	10				10		
678-330	20	P	20				20		
678-332	15	P	15				15		
678-333	30	P	30				30		
678-335	25	P	25				25		

VCU Unit #	Acres	When Removed	Drop	Defer	Adjac. Requi.	Stream/ Estuary Buffer	High Hazard Soils	Land Con- veyed	Econ./ Unmerch- antable
678-336	40	P/F	40			6		34	
678-337	15	P	15				15		
678-338	25	P		25	25				
678-340	65	P		65	65				
678-341	15	P	15				15		
678-342	15	P		15					15
678-345	40	P	40				40		
678-346	15	P	15				15		
678-347	45	P	45			15	30		
678-349	15	P	15			15			
678-350	30	P		30	30				
678-351	40	P	40				40		
678-352	35	P		35	35				
678-353	65	P		65	65				
678-354	5	P	5					5	
678-355	70	P	70					70	
678-356	60	P	60					60	
678-357	55	P	55					55	
678-358	70	P	70					70	
678-359	40	P	40					40	
678-360	30	P	30					30	
678-361	30	P	30					30	
678-362	30	P	30					30	
678-363	25	P	25					25	
678-364	50	P	50					50	
678-365	55	P	55					55	
678-366	60	P	60					60	
678-367	45	P	45					45	
678-368	70	P	70					70	
678-369	40	P	40					40	
678-370	80	P	80					80	
678-371	90	P	90					90	
678-372	105	P	60	45	45			60	
678-373	85	P	85				85		
678-374	60	P		60	60				
678-376	75	P		75	75				
678-377	40	P		40	40				
678-378	25	P		25	25				
678-380	35	P		35	35				
678-382	35	P		35	35				
678-384	60	P		60	60				
678-386	60	P		60	60				
678-387	45	P		45	45				
678-388	60	P		60	60				
678-389	60	P	60				60		
678-390	60	P		60	60				
TOTAL	**2720**		**1535**	**1185**	**1170**	**36**	**500**	**999**	**15**

VCU Unit #	Acres	When Removed	Drop	Defer	Adjac. Requi.	Stream/ Estuary Buffer	High Hazard Soils	Land Con- veyed	Econ./ Unmerch- antable
679-301	25	P	25					25	
679-302	10	P		10	10				
679-304	10	P	10				10		
679-306	20	P		20	20				
679-307	25	P		25	25				
679-308	30	P		30	30				
679-309	60	P	60					60	
679-310	35	P	35					35	
679-311	60	P	60					60	
679-312	40	P	40					40	
679-313	40	P	40					40	
679-314	20	P	20					20	
679-315	35	P	35					35	
679-316	30	P	30					30	
679-317	65	P	65					65	
679-319	25	P	25					25	
679-322	25	P		25	25				
679-324	35	P		35	35				
679-326	30	P		30	30				
679-327	30	P		30	30				
679-329	60	P		60	60				
679-330	40	P		40	40				
679-332	25	P		25	25				
679-333	35	P		35	35				
679-334	10	P		10	10				
679-335	15	P		15	15				
679-336	70	P		70	70				
679-338	35	P		35	35				
679-339	35	P		35	35				
679-340	20	P		20	20				
679-342	35	P		35	35				
679-343	30	P		30	30				
679-344	45	P		45	45				
679-347	40	P		40	40				
679-348	30	P		30	30				
679-349	15	P		15	15				
679-350	20	P		20	20				
679-351	40	P		40	40				
679-352	10	P		10	10				
679-353	25	P		25	25				
679-354	10	P	10					10	
679-356	15	F	15			15			
679-357	30	P		30	30				
679-358	15	P		15	15				
679-359	15	P		15	15				
679-360	20	P		20	20				
679-362	40	P		40	40				
679-364	10	P		10	10				
679-365	60	P		60	60				

VCU Unit #	Acres	When Removed	Drop	Defer	Adjac. Requi.	Stream/ Estuary Buffer	High Hazard Soils	Land Con- veyed	Econ./ Unmerch- antable
679-366	5	P		5	5				
679-368	5	P		5	5				
679-369	20	P		20	20				
679-370	10	P		10	10				
679-371	15	F	15			15			
679-372	15	P		15	15				
679-373	5	P		5	5				
679-374	10	P		10	10				
679-375	25	P		25	25				
679-377	30	P		30	30				
679-380	5	P		5	5				
679-381	35	P		35	35				
679-385	10	P		10	10				
679-387	10	P		10	10				
679-388	10	P		10	10				
679-389	40	P		40	40				
679-390	5	F		5					5
679-391	15	P		15	15				
679-393	50	P		50	50				
679-394	35	P		35	35				
679-395	20	P		20	20				
679-396	20	P	20				20		
679-397	35	P		35	35				
679-398	10	P	10				10		
679-401	45	P		45	45				
679-402	15	P		15	15				
679-404	75	P		75	75				
679-405	5	P		5	5				
679-406	25	P		25	25				
679-408	20	P		20	20				
679-410	25	P		25	25				
679-412	15	P		15					15
679-415	50	P		50	50				
679-416	30	P		30	30				
679-417	20	P		20	20				
679-418	50	P		50	50				
679-419	15	P		15	15				
679-426	60	P		60	60				
679-427	50	P		50	50				
679-430	25	P		25	25				
679-431	10	P		10	10				
679-432	10	P		10	10				
679-434	45	P		45	45				
679-435	35	P		35	35				
679-436	40	P		40	40				
679-438	30	P		30	30				
679-439	30	P		30	30				
679-440	80	P		80	80				
679-442	60	P		60	60				
679-443	70	P		70	70				

VCU Unit #	Acres	When Removed	Drop	Defer	Adjac. Requi.	Stream/ Estuary Buffer	High Hazard Soils	Land Con- veyed	Econ./ Unmerch- antable
679-444	70	P		70	70				
679-445	50	P		50	50				
679-448	50	P		50	50				
679-449	65	P		65	65				
679-452	40	P		40	40				
679-453	10	P	10					10	
679-454	10	P	10					10	
679-455	50	P	50					50	
679-456	60	P	60					60	
679-457	20	P	20					20	
679-458	5	P	5					5	
679-459	30	P		30					30
679-460	50	P	50					50	
679-461	35	P	35					35	
679-462	45	P	45					45	
679-463	30	P	30					30	
679-464	10	P	10					10	
679-465	50	P	50					50	
679-466	5	P	5					5	
679-469	20	P		20	20				
679-472	40	P		40	40				
679-474	25	P		25	25				
679-478	25	P		25	25				
679-480	25	P		25	25				
679-481	15	P		15	15				
679-482	55	P		55	55				
679-484	30	P		30	30				
679-485	25	P		25	25				
679-486	35	P		35	35				
679-487	20	P		20	20				
679-489	10	P		10	10				
679-490	15	F	15			15			
679-491	5	P		5					5
679-492	35	P		35	35				
679-493	10	P		10	10				
679-494	5	P		5	5				
679-495	5	P		5	5				
679-496	25	P		25	25				
679-498	25	P		25	25				
679-499	5	P		5	5				
679-500	5	P		5	5				
TOTAL	**4005**		**910**	**3095**	**3040**	**45**	**40**	**825**	**55**

VCU Unit #	Acres	When Removed	Drop	Defer	Adjac. Requi.	Stream/ Estuary Buffer	High Hazard Soils	Land Con- veyed	Econ./ Unmerch- antable
680-301	10	P	10			10			
680-302	15	F	15			15			
680-303	15	P		15	15				
680-304	5	P		5	5				
680-305	25	F	25			25			
680-306	30	F	30			30			
680-307	15	P		15	15				
680-308	10	P		10	10				
680-309	15	F	15			15			
680-311	25	P		25	25				
680-312	5	P		5	5				
680-314	20	F		20					20
680-315	15	P	15			15			
680-316	5	F	5			5			
680-318	20	P		20	20				
680-319	10	P		10	10				
680-320	5	P		5					5
680-321	50	P		50					50
680-322	15	P		15					15
680-323	35	P		35					35
680-324	40	P		40	40				
680-325	30	P		30					30
680-326	20	P		20	20				
680-327	20	P		20	20				
680-328	20	P		20					20
680-329	35	P		35					35
680-331	20	P		20	20				
680-332	25	P		25	25				
680-334	35	P		35	35				
TOTAL	**590**		**115**	**475**	**265**	**115**			**210**
681-301	5	P		5	5				
681-302	15	P		15	15				
681-303	25	P		25	25				
681-305	25	P		25	25				
681-307	20	P		20	20				
681-309	55	P		55	55				
681-310	25	P		25	25				
681-311	10	P		10					10
681-312	20	P		20					20
681-313	5	P		5					5
681-314	20	P		20					20
681-315	25	P		25	25				
681-317	20	P		20	20				
681-318	10	P		10	10				
681-319	15	F	15				15		
681-320	10	P		10	10				
681-321	20	P		20					20

VCU Unit #	Acres	When Removed	Drop	Defer	Adjac. Requi.	Stream/ Estuary Buffer	High Hazard Soils	Land Con- veyed	Econ./ Unmerch- antable
681-324	55	P		55	55				
681-325	50	P	50				50		
681-326	30	P		30	30				
681-327	20	P		20	20				
681-328	40	P		40	40				
681-329	60	P		60	60				
681-331	50	P		50	50				
681-333	30	P		30	30				
681-334	45	P		45	45				
681-335	30	P		30	30				
681-339	10	P		10	10				
681-340	40	P		40	40				
681-341	30	P		30	30				
681-342	20	P		20	20				
681-343	35	P		35	35				
681-344	10	P		10					10
681-345	10	P		10					10
681-346	15	P		15	15				
681-348	35	P		35	35				
681-350	25	P		25	25				
681-351	30	P		30	30				
681-354	40	P		40	40				
681-355	25	P		25	25				
681-356	20	P		20					20
681-358	20	P	20			20			
681-359	10	P	10			10			
681-362	20	P		20	20				
681-366	20	P		20	20				
681-371	25	P		25	25				
681-374	15	P		15	15				
681-375	40	P		40	40				
681-380	15	F		15					15
681-381	15	P		15	15				
TOTAL	**1260**		**95**	**1165**	**1035**	**30**	**65**		**130**

VCU Unit #	Acres	When Removed	Drop	Defer	Adjac. Requi.	Stream/ Estuary Buffer	High Hazard Soils	Land Con- veyed	Econ./ Unmerch- antable
682-301	35	P		35	35				
682-302	20	P		20	20				
682-303	25	P		25	25				
682-304	25	P		25	25				
TOTAL	**105**			**105**	**105**				

VCU SUMMARY

VCU #	Acres	When Removed	Drop	Defer	Adjac. Requi.	Stream/ Estuary Buffer	High Hazard Soils	Land Con- veyed	Econ./ Unmerch- antable
677	530		130	400	320		130		80
678	2720		1535	1185	1170	36	500	999	15
679	4005		910	3095	3040	45	40	825	55
680	590		115	475	265	115			210
681	1260		95	1165	1035	30	65		130
682	105			105	105				
PROJECT TOTAL	**9210**		**2785**	**6425**	**5935**	**226**	**735**	**1824**	**490**

Appendix H

Silviculture Diagnosis

CHASINA UNIT DIAGNOSIS---APPENDIX H

VCU	Unit	Ac.	VC-4 10	VC4 15	VC+4 20	VC5 25	VC+5 30	VC6 40	VC7 50	TOT. VOL.	Log Syst	Reg. Syst	% YC	Elev	Mist-Letoe	WT Risk	Productiv	Ave S.I.	W.L. Str.	Asp	PC Buff	iso-lated	Proposed Mgmt.
674	213	59					27	32		2090	HE	CC		M		H	H	60		NW			RS,PCT15,CT
674	265	47					47			1410	HE	CC		M			M	60		NW	Y		RS,PCT20,CT
677	301	10							10	500	HE	CC	10	M		H	H	100		NE		Y	RS,PCT15,CT
677	302	3			3					60	HE	CC		H		H	L	55		NE		Y	RS
677	305	19		11				8		465	HE	PC	15	H		H	L	65		SE		Y	RS
677	311	24		24						360	HE	CC	35			L	L	65		SW		Y	RS,PLANT(YC),SS
677	315	20	20							200	HE	CC				L	L	60		NW			RS,PCT25
677	319	2	2							20	HE	CC	5	H		L	L	70		NE		Y	RS
677	327	15		6		9				315	HE	CC	25	H		L	M	60		NE		Y	RS,PLANTYC,SS
677	328	14		14						210	HE	CC	20				L	60		W	Y	Y	RS,PLANTYC,SS,
678	301	14							14	700	RS	CC					H	60		N			RS,PCT15,CT
678	303	45				11		34		1635	RS	CC					H	60	Y	N	Y		RS,PCT15,CT
678	305	6				1		5		225	RS	CC					H	40		SE	Y		RS,PCT15,CT
678	310	36							36	1800	RS	CC					H	60			Y		RS,PCT15,CT
678	312	33					33			990	RS	CC				H	M	60		SE	Y		RS,PCT15,CT
678	314	15						15		600	HE	PC				L	H	75		E	Y		RS,PCT15,CT
678	316	36						36		1440	HE	CC		M		H	H	60		NE			RS,PCT15,CT
678	319	10				10				250	HE	CC	20	H	M		M	60		N			RS,PLANTYC,SS,PCT25
678	324	10				10				250	HE	PC		H		H	M	60		N		Y	RS,
678	325	61		30		31				1225	HE	CC		H			M	65		SE		Y	RS,PLANTYC,SS
678	331	6				6				150	HE	PC		H	M	H	M	65		NW	Y	Y	RS
678	334	17			17					340	HE	CC	5	H	H	H	L	60		W		Y	RS
678	339	15						15		600	HE	PC				H	H	60		S	Y	Y	RS,PCT25
678	343	25	25							250	HE	CC	20				L	65		N		Y	RS,PLANTYC,SS
678	344	21				21				525	HE	CC		H			M	65		N		Y	RS
678	348	18						18		720	HE	CC			M		H	65		W	Y		RS,PCT15,CT
678	375	36						36		1440	HE	PC		H			H	65		E	Y		RS
678	379	16						16		640	HE	PC					H	65		E			RS
678	381	48						48		1920	HE	PC					H	65		E			RS
678	383	96				96				2400	HE	PC		H			M	100		SE			RS
678	385	50				50				1250	HE	PC		H		L	M	100		SE			RS
679	303	6		6						90	HE	PC		H			L	70		SE		Y	RS,PLANTYC,SS
679	305	9		9						135	HE	PC		H		H	L	70		SE		Y	RS
679	318	92		40		40	12			1960	RS	PC	40			H	M	70		S	Y		RS,PLANTYC,SS
679	320	40		12			14	14		1160	SL	PC	40	H		H	M	70		SE	Y	Y	RS,PLANTYC,SS,PCT15,CT
679	321	23		10		13				475	SL	CC	25	H		H	M	60		E			RS,PLANTYC,SS,PCT20,CT
679	323	34				34				650	SL	CC	10	H			M	75		S	Y		RS,PCT20

CHASINA UNIT DIAGNOSIS---APPENDIX H

VCU	Unit	Ac.	VC-4 10	VC4 15	VC+4 20	VC5 25	VC+5 30	VC6 40	VC7 50	TOT. VOL.	Log Syst	Reg. Syst	% YC	Elev	Mist-Letoe	WT Risk	Productiv	Ave S.I.	W.L. Str.	Asp	PC Buff	iso-lated	Proposed Mgmt.
679	325	45				38		6		1215	SL	CC	50	M			M	70		NE	Y		RS,PCT20,CT
679	328	66				11		55		2475	SL	CC				H	H	85	Y	E			RS,PCT20
679	331	52		8		34		10		1370	SL	CC		H			M	70	Y	S	Y		RS,PCT15,CT
679	337	51		25		8			18	1475	HE	PC	25	H			M	75	Y	NE	Y		RS,PLANTYC,SS
679	341	38				28		10		1050	RS	CC					M	80	Y	W	Y		RS,PCT15,CT
678	355	56					31	25		1930	SL	CC		M			H	100	Y	NW	Y		RS,PCT15,CT
679	361	38		20	18					680	RS	CC	50	H	H		L	40		NW			RS,PLTYC,SS,REL,PCT25+,CT
679	363	66				66				1650	RS	CC					M	80		W			RS,PCT20,CT
679	367	40				40				1000	RS	CC					M	70		NW			RS,PCT20,CT
678	378	23		23						345	RS	CC	35				L	70	Y	W	Y		RS,PCT20,CT
679	378	34			19	15				755	SL	CC					L	80	Y	W	Y		RS,PLTYC,SS,PCT25
678	379	8				8				150	HE	PC					M	70		W			RS,PCT25+
678	382	52		52						780	SL	PC				L	L	100	Y	SW	Y		RS,PLTYC,SS,PCT25+
678	383	8		8						135	RS	CC				H	L	70		E			RS,PCT25+,CT
678	384	17		17						255	RS	PC					L	40		NE			RS,PCT25+,CT
678	386	22		10		12				450	RS	CC	40				M	70		E			RS,PLTYC,SS,PCT25+
679	392	51							51	2550	RS	CC					H	100		E			RS,UNEVEN
679	403	71							71	3550	RS	CC					H	100		SW			RS,UNEVEN
679	407	43				20	23			1190	RS	CC					H	100		SW			RS,PLTYC,SS,PCT25+,CT
679	409	66				66				1650	RS	CC				H	M	100	Y	SW	Y		RS,PLTSS,PCT25+,CT
679	413	11		11						165	HE	CC					L	40		NW		Y	RS,PCT25+
679	414	52		52						780	RS	PC	40			H	L	65		N			RS,PLTYC,SS,PCT25+
679	420	53							53	2650	SL	PC					H	100		N			RS,PCT15,CT
678	422	47						47		1880	RS	CC	50				H	100		N			RS,PLTYC,SS,PCT20,CT
679	425	110		110						1650	RS	PC					L	80	Y	NW	Y		RS,PCT15,CT
679	433	81						81		3240	RS	PC					H	100		N	Y		RS,REL,PCT15,CT
679	437	61				61				1525	RS	PC					M	80	Y	S	Y		RS,REL,PCT20
679	441	26				26				650	RS	PC					M	100		SW	Y		RS,REL,PCT20,CT
679	448	16						16		640	RS	PC					H	100		N	Y		RS,GS,GS,GS
679	447	66						66		2640	RS	PC					H	85	Y	NE			RS,PCT20,CT
678	450	57				22		35		1950	RS	CC					H	85		NE			RS,PCT20
679	451	7							7	350	HE	CC				H	H	80		N			RS,PCT25+
679	467	37						37		1480	SL	PC					H	85	Y	NW	Y		RS,GS,GS,GS
679	470	17				17				425	SL	PC					M	100	Y	W	Y		RS
679	471	8		8						120	HE	PC					L	65		W		Y	RS
679	473	31				31				775	HE	PC					M	65		W		Y	RS
679	475	14		14						210	HE	PC				H	L	65		N			RS

CHASINA UNIT DIAGNOSIS---APPENDIX H

VCU	Unit	Ac.	VC-4 10	VC4 15	VC+4 20	VC5 25	VC+5 30	VC6 40	VC7 50	TOT. VOL.	Log Syst	Reg. Syst	% YC	Elev	Mist-Letoe	WT Risk	Prod uctiv	Ave S.I.	W.L. Str.	Asp	PC Buff	Iso-lated	Proposed Mgmt.
679	477	30						30		1200	SL	PC					H	100		E			RS
679	479	15						15		600	HE	PC	?	H	H		H	100	Y	N			RS,PLTYC/SS,SS,REL,PCT25+
679	483	9					9			270	RS	PC				L	M	90	Y	W			RS,PCT15
679	497	21							21	1050	RS	PC					H	100		W	Y		RS,PCT15
679	501	15			15					300	HE	PC					L	70		W	Y		RS,PLTYC,SS,REL,PCT25+,CT
679	502	24		24						360	HE	PC					L	85	Y	S	Y		RS,PCT25+
679	503	19		19						285	HE	PC				H	L	70		S			RS
679	504	7			7					140	HE	PC					L	70		W			RS
679	505	17			17					340	HE	PC				L	L	70		S			RS
679	506	6				6				150	HE	PC				H	M	70	Y	W			RS
679	507	55			55					1100	HE	PC				L	L	85		E			RS
679	508	8						8		320	HE	PC					H	70		E			RS
680	310	28	21			7				385	RS	PC	45				L	70		NE	Y		RS,PLTYC,SSPCT25+
680	317	25	12			13				445	RS	PC	?				M	80		S	Y		RS
680	330	71		71						1085	RS	CC	45		M		L	60		E	Y		RS,PLTYC,SS,REL,PCT25+
680	333	69				89				1725	SL	CC				H	M	85		NE	Y		RS,PCT20
680	335	11		11						165	RS	PC	40				L	60		E			RS,PLTYC,SS,REL,PCT25+
681	304	73	20	45	8					1035	RS	CC	60				L	65		SE	Y		RS,PCT25+
681	308	5	5							50	RS	CC	60				L	60		SE	Y		RS,PLT,SS
681	318	36			36					720	SL	CC	15			H	L	65		NE	Y	Y	RS
681	322	48					48			1440	RS	CC	5				M	60		SE		Y	RS
681	323	21		21						315	RS	CC					L	65		S		Y	RS,PCT20
681	330	79	3	4		40		32		2370	RS	CC					M	80		SE	Y		RS,PCT20,
681	332	34	2			22		10		970	RS	CC				H	M	100		S	Y		RS,PCT20
681	337	34							34	1700	RS	CC				H	H	100		N			RS,PCT20
681	338	28						28		1120	SL	CC	15			L	H	100		NW			RS,PCT15
681	347	53						53		2120	SL	CC				L	H	100	Y	SE	Y		RS,PCT20
681	352	34	10	2		13	9			725	RS	CC				H	M	100		S			RS,PCT25+
681	361	51				35		8	8	1595	RS	CC				H	M	80	Y	SW	Y		RS,PCT15
681	363	41						41		1640	SL	CC	40		H	H	H	100	Y	N	Y		RS
681	365	14				14				350	SL	CC					M	80		N			RS,PCT20
681	367	25		25						375	RS	CC					L	60		NW			RS,PCT20
681	368	110				57	53			3015	HE	CC					M	60		NW	Y		RS,REL,PCT20
681	372	25				15		10		775	RS	CC	20				M	80		N			RS,PCT20
681	373	25					25			750	RS	CC	70				M	85		E			RS,PLTYC,SS,PCT25+
681	378	19			19					380	RS	CC	30		H		L	65		NE	Y		RS,PLTYC,SS,REL
681	377	7	7							70	RS	CC	40		H		L	65		NE			RS,PLTYC,SS,REL

CHASINA UNIT DIAGNOSIS---APPENDIX H

VCU	Unit	Ac.	VC-4 10	VC4 15	VC+4 20	VC5 25	VC+5 30	VC6 40	VC7 50	TOT. VOL.	Log Syst	Reg. Syst	% YC	Elev	Mist-Letoe	WT Risk	Prod uctiv	Ave S.I.	W.L. Str.	Asp	PC Buff	iso-lated	Proposed Mgmt.
681	383	8						8		320	HE	PC					H	85		N			RS,PCT15
682	301	57					25	32		2030	SL	CC	15				H	70		SW			RS,PCT15
682	302	50				25	25			1375	LS	CC	15		H		M	80		N			RS,PCT15
682	303	48	20			28				800	LS	CC	50				M	85		S			RS,PCT20
682	304	26				26				650	RS	CC					M	85		S			RSPLTYC,SS
682	305	31		31						465	SL	CC	50				L	85		SE			RS,PLTYC,SS
682	306	43		36		7				715	SL	CC	60				L	75		SE	Y		RS,PCT25
682	307	10					10			300	HE	CC	15				M	80		E			RS
682	500	73					73			2180	SL	CC					M	75		NE			RS,REL,PCT20
682	501	34				34				850	RS	CC	50				M	100	Y	SW	Y		RS
682	502	30				30				750	SL	PC					M	100		S			RS,PCT20
682	503	19		19						285	RS	PC					L	75	Y	S			RS,PCT25+
		4190									0	0		0	0	0							

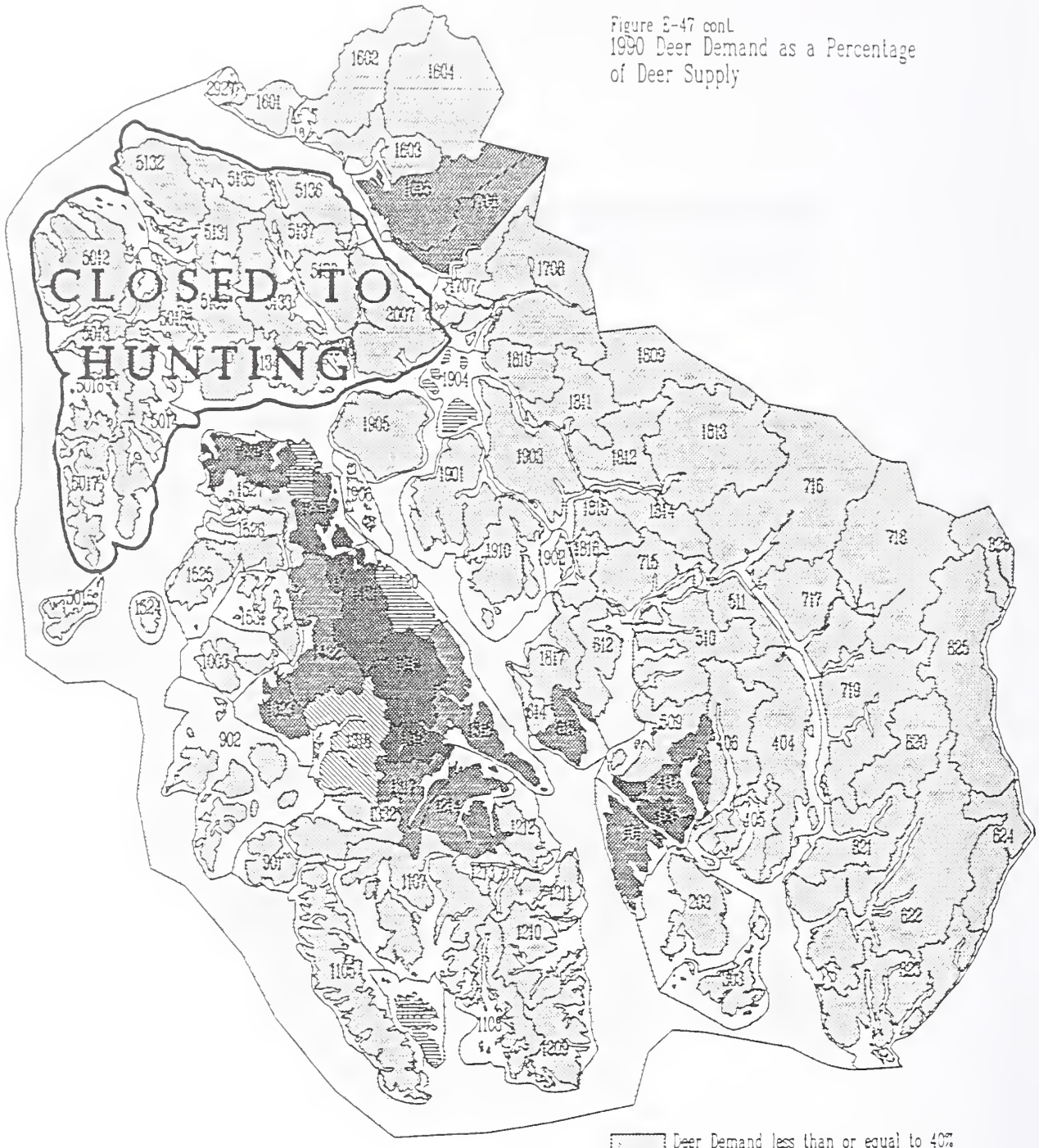
Appendix I

Deer Availability/ Demand Maps

Deer Demand as a Percentage of Deer Supply: 1990 and 2040

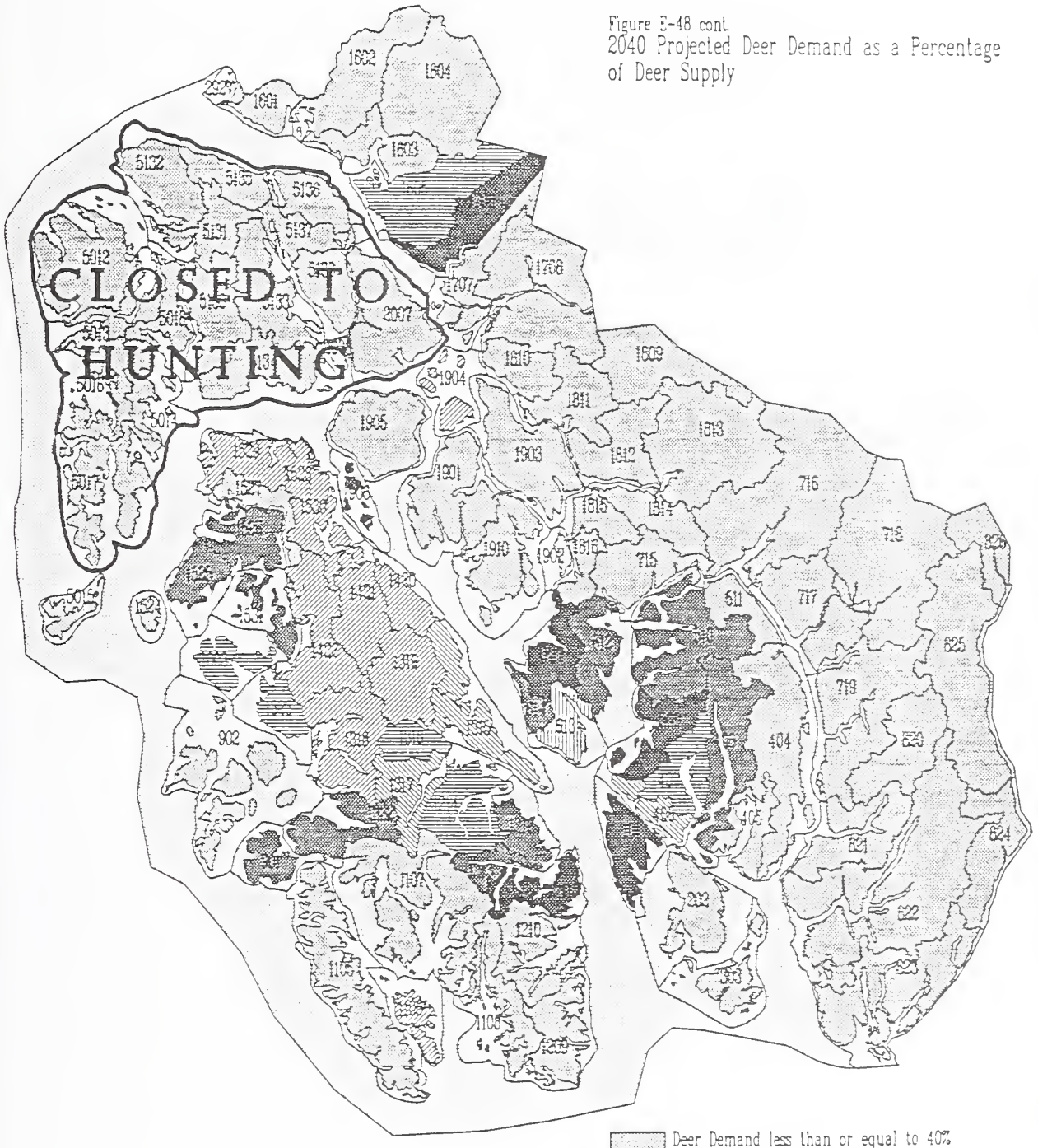
SOURCE: ADF&G Division of Subsistence, Toss Analysis Maps, Chatham Area GIS

Figure 8-47 cont.
1990 Deer Demand as a Percentage of Deer Supply



Note: This map displays deer demand (projected harvest) as a percentage of the 1990 deer supply (10% of the habitat capability) for each Wildlife Analysis Area (WAA). Areas where demand for deer exceeds 120 percent of the WAA supply, indicate that existing deer habitat is not sufficient to sustain present harvest levels. Harvest data is from Alaska Dept. of Fish and Game (ADF&G) 1987- 1990 deer hunter surveys; deer habitat capability estimates are from the Tongass Land Management Plan Revision (TLMP).
Source: ADF&G Div. of Subsistence Toss Analysis Map III Chatham Area GIS

Figure 3-48 cont.
2040 Projected Deer Demand as a Percentage of Deer Supply



Note: This map displays deer demand (1987-90 mean harvest) versus deer supply (10% of habitat capability) 50 years from now for each Wildlife Analysis Area (WAA). Demand is assumed to increase with projected population growth at 12% per decade through 2010 and 15% per decade through 2040. Areas where demand for deer exceeds 120 percent of the WAA supply, indicate that existing deer habitat is not sufficient to sustain present harvest levels. Harvest data is from Alaska Dept. of Fish and Game (ADF&G) 1987- 1990 deer hunter surveys; deer habitat capability estimates are from the Tongass Land Management Plan Revision (TLMP).

Source: ADF&G Div. of Subsistence Toss Analysis Map 112, Chatham Area GIS.

Appendix J

Road and Unit Cards

Acronymns and Symbols Used on Unit Cards

A or AC	acre
AHMU	aquatic habitat management unit
B/W or B&W	blue/white
BDRY	boundary
BMP	Best Management Practice
CC	clearcut
CMT	culturally modified tree
CRG	Craig
DBH	diameter at breast height
DF	directional falling
E	east
ELEV	elevation
FS	full suspension
G/W or G&W	green/white
GS	group selection
GIS	geographic information system
HE	helicopter yarding
KTN	Ketchikan
MBF	thousand board feet
MGMT	management
MMI	mass movement index
MOD	moderate
MOU	memorandum of understanding
N	north
O/W or O&W	orange/white
OSR	overstory removal
PC	partial cut
PCT	precommercial thinning
PS	partial suspension
PVT	private
RS	running skyline
RSDEIS	Revised Supplement to the Draft EIS TLMP
S	south
SH	shovel yarding
SILVI	silvicuture
SL	slack line
SY	split yarding
TES	threatened/endangered/sensitive species
TLMP	Tongass Land Management Plan
TPA	trees per acre
TTRA	Tongass Timber Reform Act
VCU	value comparison unit
W	west
YC	yellowcedar

CHASINA ACCESS MANAGEMENT

ROAD MANAGEMENT OBJECTIVES

Road Number	Traffic Service Level	Road Management Objectives	Existing or New Construction	Post Sale Maintenance Level	Method of Closure	Identified Stream Crossings I	II	III	Fisheries Restrictions T	P	S O I L S	K A R S T	Remarks and/or Concerns
2160000	D	Close/Open	C/E	1/E	Barrier		x	x	x	x	x	x	Most of existing road to remain open for admin purposes, new const. to be closed for econ. and wildlife. Road closures by gate at jct of 2160900 and 2160786
2160600	D	Close	C	1	Barrier	x	x	x	x	x		x	Road is tributary to 2160 past proposed gate location. Closed for Wildife and economic concerns.
2160610	D	Close	C	1	Barrier						x		Tributary to 2160600
2160620	D	Close	C	1	Barrier						x		Tributary to 2160600
2160625	D	Close	C	1	Barrier						x		Tributary to 2160600
2160627	D	Close	C	1	Barrier						x		Tributary to 2160600
2160629	D	Close	C	1	Barrier								Tributary to 2160600
2160630	D	Close	C	1	Barrier						x		Tributary to 2160600
2160640	D	Close	C	1	Barrier						x		Tributary to 2160600
2160650	D	Close	C	1	Barrier						x		Tributary to 2160600
2160653	D	Close	C	1	Barrier						x		Tributary to 2160600
2160655	D	Close	C	1	Barrier						x		Tributary to 2160600
2160660	D	Close	C	1	Barrier						x		Tributary to 2160600
2160670	D	Close	C	1	Barrier						x		Tributary to 2160600
2160770	D	Close	C	1	Barrier				x		x		Tributary to 2160000
2160775	D	Close	C	1	Barrier			x			x		Tributary to 2160000
2160777	D	Close	C	1	Barrier						x		Tributary to 2160000
2160779	D	Close	C	1	Barrier						x		Tributary to 2160000
2160781	D	Close	C	1	Barrier						x		Tributary to 2160000
2160785	D	Close	E	1	Barrier								Econ. and wildlife
2160786	D	Close	E	1	Barrier						x		Econ. and wildlife
2160787	D	Close	C	1	Barrier						x		Econ. and wildlife
2160788	D	Close	C	1	Barrier						x		Econ. and wildlife
2160789	D	Close	C	1	Barrier						x		Econ. and wildlife

CHASINA ACCESS MANAGEMENT

ROAD MANAGEMENT OBJECTIVES

Road Number	Traffic Service Level	Road Management Objectives	Existing or New Construction	Post Sale Maintenance Level	Method of Closure	Identified Stream Crossings I	II	III	Fisheries Restrictions T	P	S O 1 L S	K A R S T	Remarks and/or Concerns
2160792	D	Close	C	1	Barrier						x		Economics and wildlife
2160793	D	Close	E/C	1	Barrier						x		Tributary to 2160795
2160794	D	Close	C	1	Barrier						x		Tributary to 2160795
2160795	D	Close	E/C	1	Gate						x		Economics and wildlife
2160800	D	Close	E/C	1	Gate								Close west end with gate, close east end with road removal for economic and wildlife concerns.
2160809	D	Close	C	1	Barrier								Tributary to 2160800
2160840	D	Close	C	1	Barrier						x		Tributary to 2160800
2160850	D	Close	C	1	Barrier						x		Economics and wildlife
2160854	D	Close	C	1	Barrier						x		Tributary to 2160850
2160855	D	Close	C	1	Barrier						x		Tributary to 2160850
2160856	D	Close	C	1	Barrier						x		Tributary to 2160850
2160857	D	Close	C	1	Barrier						x		Tributary to 2160850
2160858	D	Close	C	1	Barrier						x		Tributary to 2160850
2160860	D	Close	C	1	Barrier						x		Barrier at boundry of pvt land, remove all drainage structures prior to road closure.
2160905	D	Open	C	1							x		LTF, Open for admin. use
2160910	D	Close	C	1	Barrier						x		Economics, wildlife concerns
2160900	D	Close	C	1	Barrier						x		Tributary to 2160000
2160920	D	Close	C	1	Barrier						x		Tributary to 2160000
2160922	D	Close	C	1	Barrier								Tributary to 2160000
2160925	D	Close	C	1	Barrier						x		Tributary to 2160000
2160930	D	Close	C	1	Barrier								Tributary to 2160000
2160931	D	Close	C	1	Barrier						x		Tributary to 2160930
2160950	D	Close	C	1	Barrier						x		Tributary to 2160000
2160980	D	Close	C	1	Barrier						x	x	Economics and wildlife
2160982	D	Close	C	1	Barrier						x	x	Tributary to 2160980
2160985	D	Close	C	1	Barrier						x	X	Tributary to 2160980
2160986	D	Close	C	1	Barrier						x	x	Tributary to 2160980
2160988	D	Close	C	1	Barrier						x	x	Tributary to 2160980
2160989	D	Close	C	1	Barrier						x	x	Tributary to 2160980

Chasina Unit Cards
Resource Recommendations/Considerations

The recreation review of the Chasina Planning Area occurred during the 1995 field season. Previously inventoried recreation sites were visited, as well as high probability sites for recreation. There were no recreation sites located in or adjacent to proposed timber sale units.

There are no recommendations for changes to the timber sale units due to their proximity to recreation sites. Therefore, "Recreation" has not been included on the unit cards for this project. While visual quality is important to the integrity of the recreation sites, this is covered by the landscape architect in the "Visuals" section of the unit cards.

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

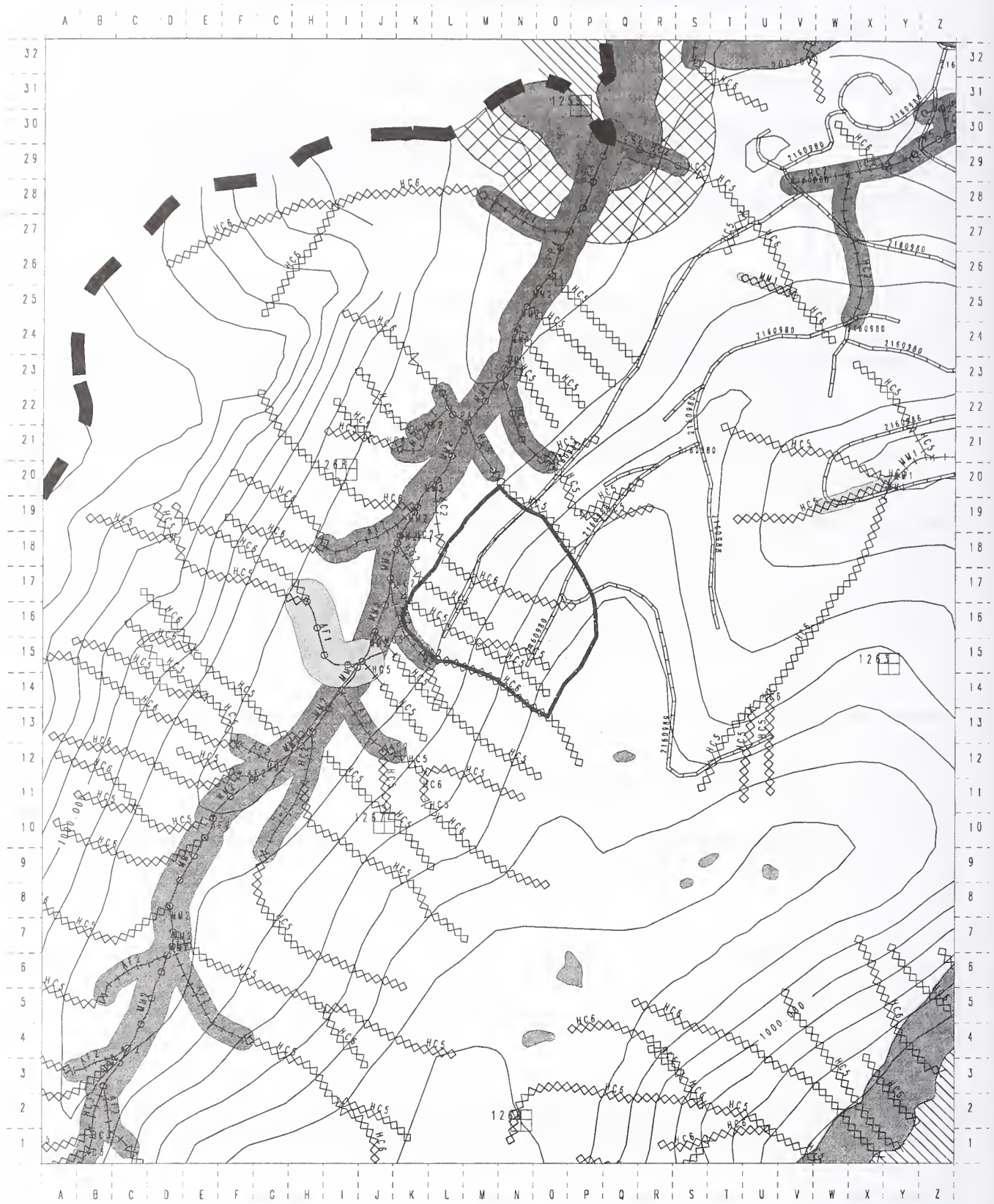
VCU-UNIT#: 674-213 ACRES: 53 VOL: 1877 MBF ALTERNATIVES: 5,6

PHOTO YR/#: '91-590-65,64 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67404- Windthrow potential is high. Productivity of site is high. Difficult terrain - potential blind leads in lower portion. Verify feasibility and modify unit bdry as required. Profiles needed. Midslope and/or upperslope road need verification. Unit has been expanded to the east and north (leave setting between units). Dropped lower portion due to blind leads and buffer. Avoid unstable chutes. Split-yarding required on stream. Suspension requirements (see soils or fish). Buffers (see fisheries). Unit changed to provide proportionality of volume classes.
	ROADS: May not need lower road.
R.Johnson, 8/04/95	SOILS/WATERSHED: Soils Tolstoi with Tokeen, and riparian below 310'. Slopes generally 60-75%, although generally less than 45% below 480'. Delete riparian below 310' for buffer on Cannery creek, which at 210' NW corner unit (BMPs 12.6, 12.6a). Partial suspension for MMI3, small areas slumping (MMI4) too small to delete (BMP 13.5), and few areas >75% slopes (BMP 13.9). Possible add upslope to W done. Third order watershed (BMP 12.1). Streams reviewed and prescribed by fisheries (BMPs 12.6, 12.6a, 13,16). Doubt 100' buffer desired O&W class III middle unit because potential blowdown and small areas MMI4 inside drainage. Even slope break buffer potential to blowdown; could diameter limit harvest, slope break buffer. Keep lower road above riparian in bottom (BMPs 12.6, 12.6a, 14.2).
K. McCartney, J. Hannon, 6/30/95 K.McCartney, M. Solomon, S. Deck, B. Johnston 6/28/96	FISHERIES: Stream 1 is a class IV green/ white. Stream 2 is a class IV green/white; below the junction with stream 1, stream 2 is a class III orange/white. Stream 3 is a class II blue/white that will require a 120' TTRA buffer (BMP 12.6). Above this, stream 3 is a class III orange/white that requires a slope break plus 25' buffer (BMP 13.16). Stream 7 is a class IV green/white; below 750' of elevation stream 7 turns into a class III orange/white. Stream 8 is a class III orange/white. Stream 9 is a class III orange/white. Stream 10 is a class III orange/white. The class III orange/white streams require directional falling, split yarding or full suspension, and immediate cleaning of introduced debris from the channel (BMP 13.16). The class IV green and white streams require directional falling, and split yarding (where practical) or partial suspension . Clean class IV streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, M.Pacheco, J. Wrate 6/20/95 B.Johnston 6/28/96	WILDLIFE: Deer forage and sign seen throughout. Bear sign also common. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/28/96 Prolific deer and bear sign at beaver ponds along SW edge of unit. Deer bones along stream.
T.Fifield 10/28/97	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use: type A clear-cut. O&W streams require DF, full over or SY, and cleaning of introduced debris immediately. Partial suspension required for soils protection.

Chasina Study Area Interim Layout NOI Unit 674-213

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

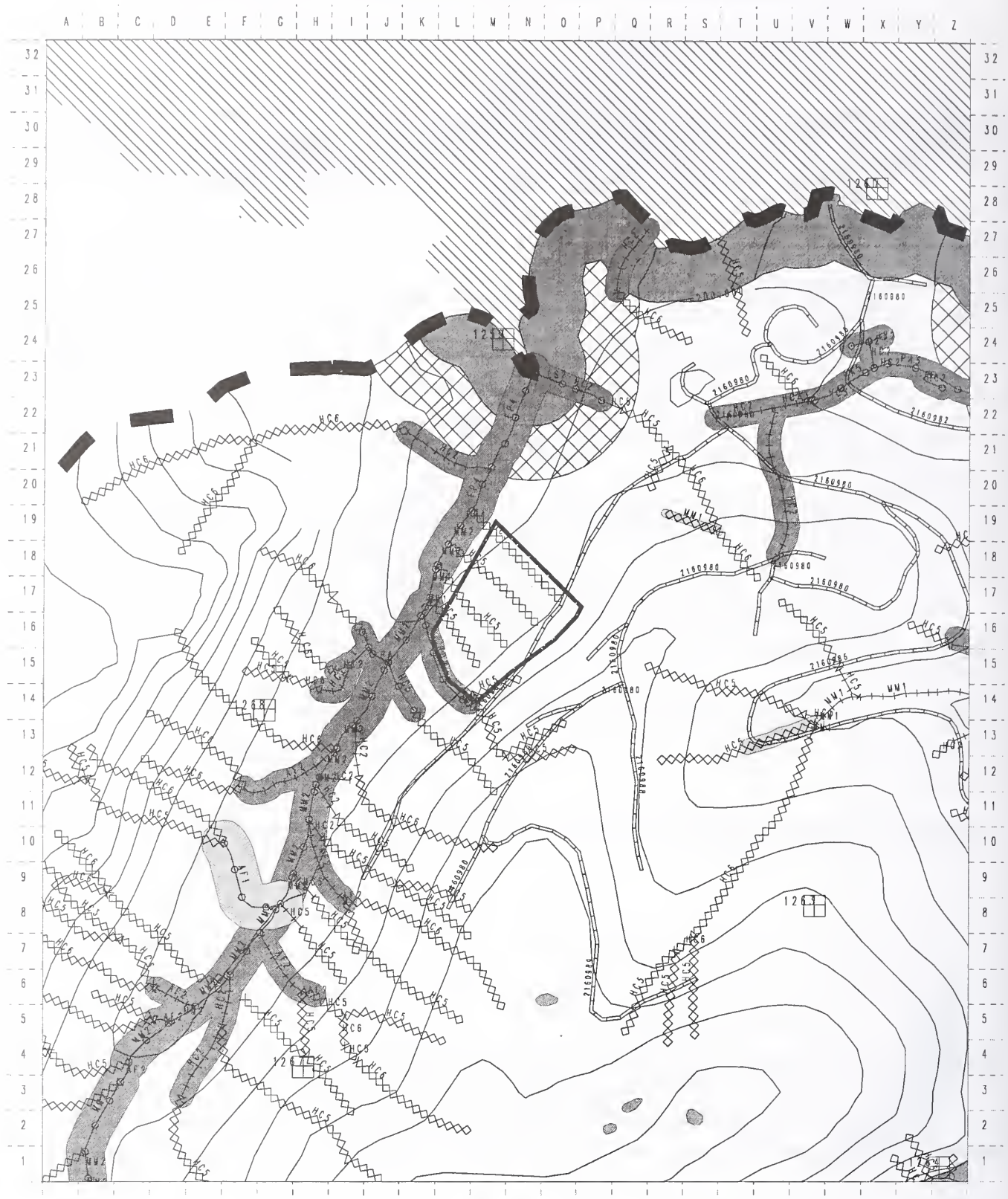
VCU-UNIT#: 674-265 ACRES: 53 VOL: 1716 MBF ALTERNATIVES: 5,6

PHOTO YR/#: '91-590-65 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE , SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: Productivity of site is moderate, low windthrow risk, difficult terrain - potential blind leads in lower portion. Verify feasibility and modify unit bdry as required. Profiles needed. Avoid unstable chutes. Roading difficult - mid-slope vs upper road needs verification. Buffers (see fisheries): Class III buffers for retention needs. Unit has adequate buffer at bottom.
	ROADS: No concerns.
R.J 8/04/95	SOILS/WATERSHED: Soils riparian above Cannery Creek; Tolstoi, Traitors, McGilvery, with Tokeen above bottom to mid-unit; McGilvery and rock walls and outcrops upper portion. Slopes less than 30% riparian; 60-75% lower unit; greater than 80% upper unit. Delete riparian below 260' (Cannery Creek at 220') SW corner, to 200' (Cannery Creek 120') NW corner. Delete upper portion unit above irregular line at 500' to 600' to avoid rock walls and McGilvery, MMI4 and unstable soils on slopes below and between rock walls on rock walls on slopes greater than 75%, and V-notches from rock walls that are often slide paths (BMP 13.5; TLMP 1991). Remaining lower portion of unit partial suspension for MMI3 and McGilvery (BMP 13.9; TLMP 1991). Doubts 100' buffer desired south boundary if class III, appears former slide shoot with disturbance species, and potential blowdown. Recommend O&W protection (BMP 13.16). Need O&W protection upper portions some or all streams in unit due MMI4 and unstable sideslopes, and former slide paths (BMP 13.16). Doubts feasibility upper road (BMP 14.2). Lower road planned, also, should be above riparian below unit (BMPs 12.6, 12.6a, 14.2). Third order watershed (BMP 12.1).
K.Buckley, K.Kitchel 6/28/96	FISHERIES: Recommend a 300' TTRA buffer on Cannery Creek (BMP 13.16). NOTE: Stream 8 is flagged class II orange/white at its confluence with Cannery Creek; it should be flagged class II blue/white and requires a 120" TTRA buffer (BMP 13.16). At 180" elevation stream 8 changes to a class III orange/white. At an elevation of 260', stream 8 changes to a class IV green/white. Stream 9 is a class IV green/white. Stream 7 is class IV green/white. Stream 5 is a class IV green/white. Stream 10 is a class IV green/white. Stream 11 is a class III orange/white. The class III orange/white streams require directional felling and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The class IV green/white streams require directional felling and split yarding (where practical) or partial suspension (BMP 13.16).
D.Parker, M.Pacheco, J.Wrate 6/20/95 C.Tighe, B.Johnston 6/28/96	WILDLIFE: Deer forage throughout unit. Deer and bear sign seen throughout unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/28/96 Lots of bear sign in NW part of unit.
T.Fifield, J.Short 5/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit will be surveyed in 1996.
	VISUALS: Entire unit harvested in a way that retains at least 50% of stand throughout every acre of unit or creates about (5-7) 2 or 3 acre openings. Dispersed throughout this stand.
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use: type B clear-cut on 2/3 of the unit with slackline system and use type C clearcut using helicopter logging system on 1/3 (upper portion). Helicopter has diameter limit of 20" DBH and 25% reduction of volume. Unit dropped from preferred alternative due to proportionality based on acres.

Chasina Study Area Interim Layout NOI Unit 674-265

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

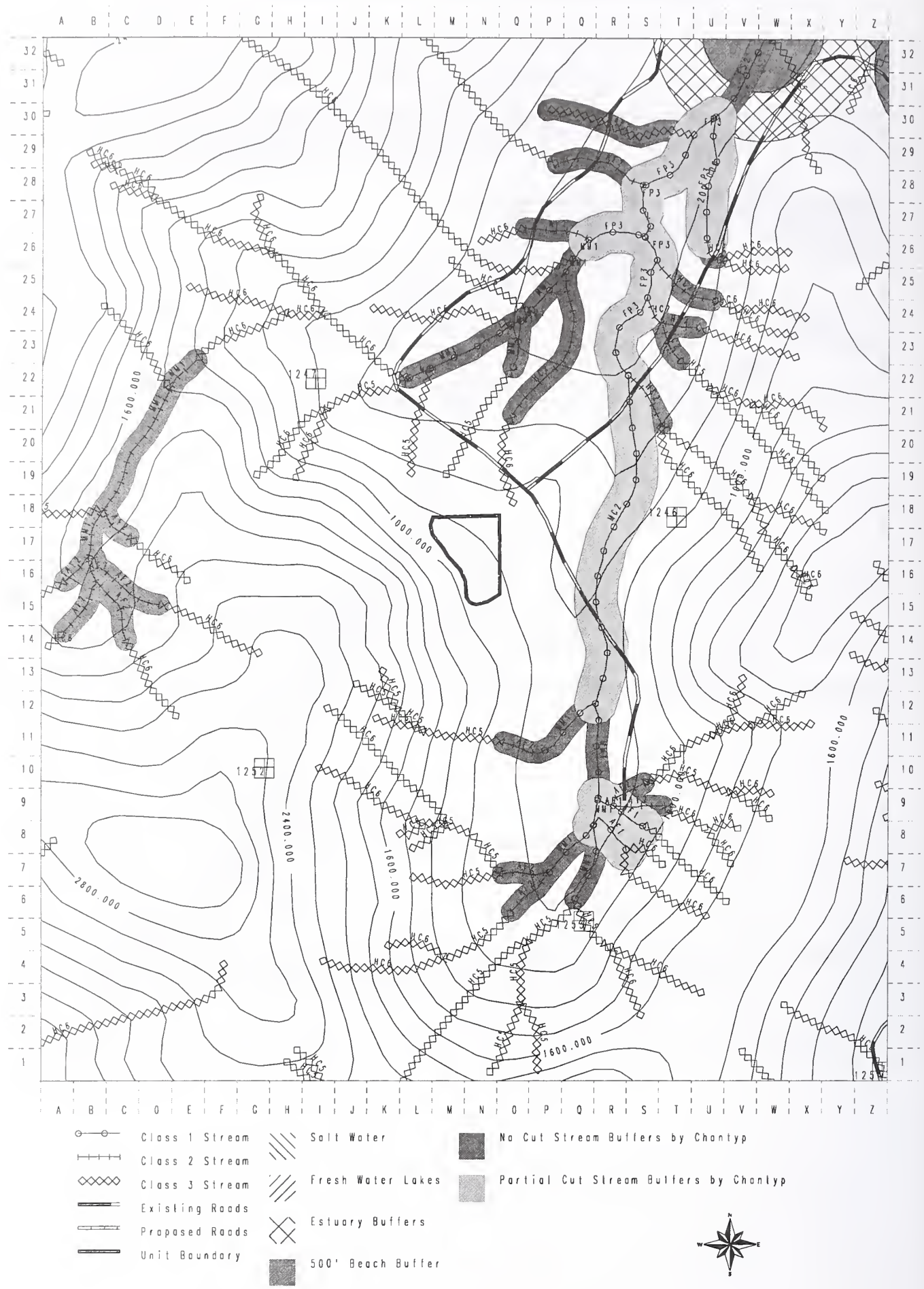
VCU-UNIT#: 677-301 ACRES: 10 VOL: 500 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-590-142 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67701-10, high windthrow risk, mod. elev. Productivity of site is high. Adjacent to private land. Windy funnel valley edge. Avoid steep slopes. Isolated stand, should only be logged with adjacent units.
J.Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr, 10/18/95 EIS - R.Johnson	SOILS/WATERSHED: Soil Tolstoi. Slopes III 30-90%. Approximately 4 acres on slopes greater than 75 % below cliff. High MMI soils in most of the unit. Minimum partial suspension required throughout unit (BMP 13.9). Full suspension should be achieved via prescribed helicopter yarding. One class III stream in the avalanche area south of the unit needs O&W protection (directional fall, split yard or full suspension over, and immediately clean out introduced debris; BMP 13.16). Small intermittent stream in the northeast corner of the unit does not need protection with helicopter yarding. The unit is in a watershed that has been heavily harvested in the past (BMP 12.1). This is a third order watershed.
K. Buckley, 7/96	FISHERIES: No streams found in the unit. Orange/ white stream identified by soils is thought to be outside the unit but recommend protection described by soils.
M.Dillman 7/96	WILDLIFE: To provide for adequate snag density and distribution within the VCU, recommend leaving a 0.1 acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees where possible to maintain habitat structure. This unit did not rate as a high priority unit for wildlife because its elevation is above that recommended in the current goshawk protocol. Therefore, wildlife did not survey in 1995 or 1996.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use: type C clear-cut helicopter logging. Minimum partial suspension throughout the unit required for soils protection.

Chasina Study Area Interim Layout NOI Unit 677-301

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Werfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

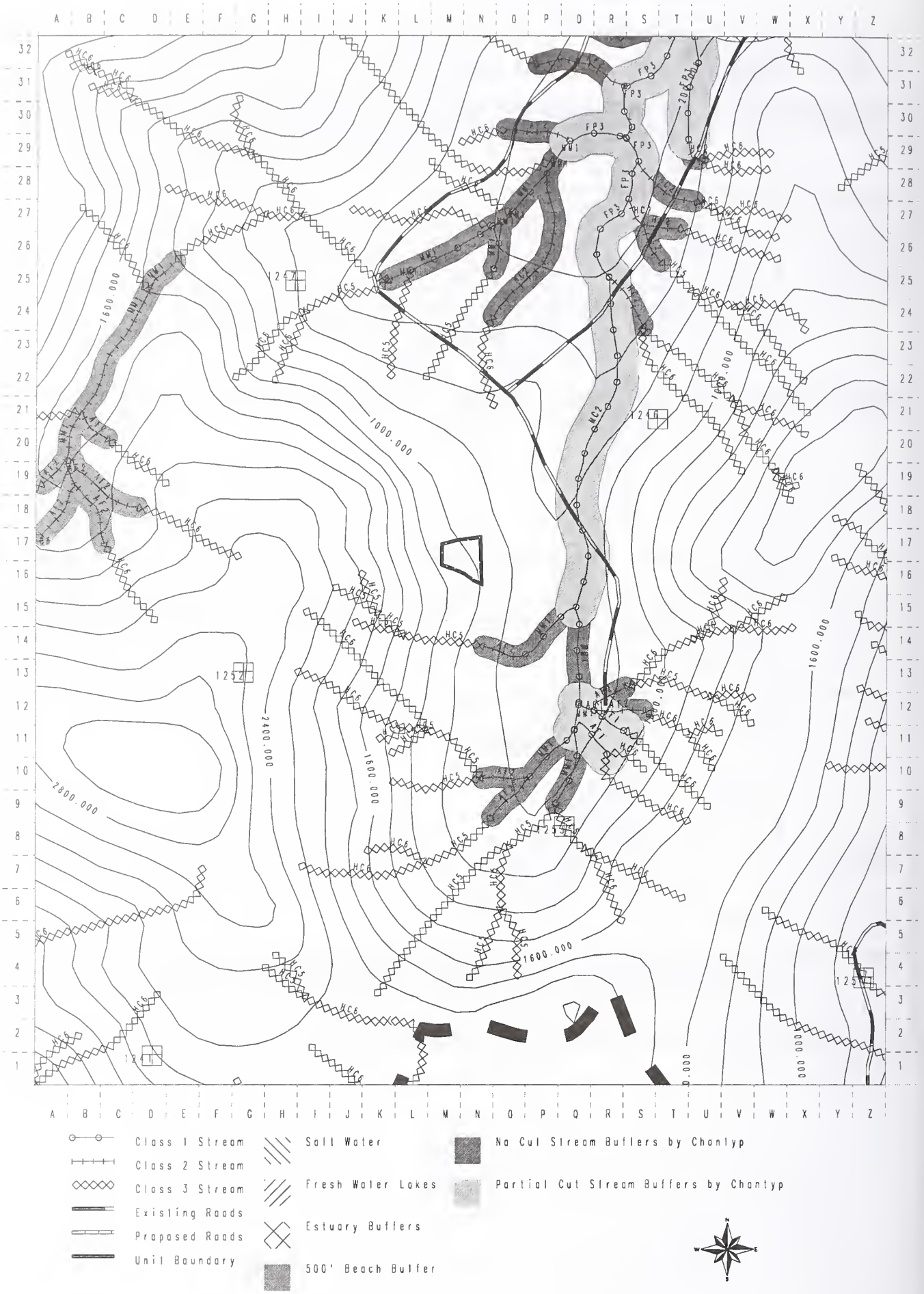
VCU-UNIT#: 677-302 ACRES: 3 VOL: 60 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-590-142 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67701-7, high windthrow risk, high elev. Productivity of site is low, very steep, rocky with slides adjacent. Adjacent to private land. Windy funnel valley edge. Isolated, only log with adjacent units.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr, 10/18/95 EIS - R.Johnson	SOILS/WATERSHED: Soils Tolstoi, McGilvery, Remedios, and Kaikli. Slopes 40 to 100%. Approximately 1 acre of forested wetland. About 2 acres high MMI soils. A minimum of partial suspension is required (BMPs 12.5, 13.9). Full suspension should be achieved via prescribed helicopter yarding. Recommendation to drop approximately 4 A, very thin McGilvery on talus slopes greater than 75% in south portion of unit, has been done (TLMP 1991). Two class III streams, one on the north and one on the south boundary, need O&W protection (directional fall, split yard or full suspension, clean out introduced debris immediately; BMP 13.16). A small intermittent stream flowing from the forested wetland does not need protection with helicopter yarding. The unit is in a watershed that has been heavily harvested in the past (BMP 12.1). This is a third order watershed. Potential add about one A in northwest corner; backline at base of large cliff.
K.Buckley 7/96	FISHERIES: Streams identified by soils are thought to be outside the unit boundaries. However, if they are within the unit boundaries, follow the soils prescriptions for stream protection.
M.Dillman 7/96	WILDLIFE: To provide for adequate snag density and distribution within the VCU, recommend leaving a 0.1 acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees where possible to maintain habitat structure. This unit did not rate as a high priority unit for wildlife because its elevation is above that recommended in the current goshawk protocol. Therefore, wildlife did not survey in 1995 or 1996.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Unsuitable soils, drop from timber base. Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use: type C clear-cut, helicopter logging. Minimum of partial suspension is required for soils protection.

Chasina Study Area Interim Layout NOI Unit 677-302

Mapscale 1:15840 (4 inch to Mile)


A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
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1000.000
2400.000
2800.000
1600.000
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1600

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 677-305 ACRES: 19 VOL: 485 MBF ALTERNATIVES: 6

PHOTO YR/#: '72-40-142 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67702-4, high windthrow risk, high elev. Productivity of site is low. Adjacent to private land. Surrounding isolated ridgetop. Low value / high defect. Keep unit on ridgetop, avoid steep slopes surrounding.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 528D (Tolstoi - McGilvery 35-60%), with 29EF (McGilvery 60-100%). Partial suspension for McGilvery (TLMP1991). Helicopter prescribed. Unit basically top of ridge. Deletions by silviculture include steep McGilvery NW corner and steep MMI4 on W side (BMP 13.5; TLMP 1991). E boundary at break from flatter top to steep slopes below for MMI4 and McGilvery (BMP 13.5; TLMP 1991). Probable O&W protection needed headwaters class III streams both E and W sides of ridge (BMP 13.16). W portion in third order watershed (BMP 12.1).
K.McCartney, K. Kitchel, S. Deck, 6/19/96	FISHERIES: Stream 1 is a class III orange/ white that requires directional falling, and split yarding or full suspension. Remove introduced debris immediately (BMP 13.16).
M.Dillman 7/96	WILDLIFE: To provide for adequate snag density and distribution within the VCU, recommend leaving 0.1 acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees where possible to maintain habitat structure. This unit was not a high priority unit for wildlife. The steepness and elevation of this unit were over that which is called for in the current goshawk protocol. Wildlife did not survey unit in 1995 or 1996. Estuary requires 1000 foot buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use: type C clear-cut. O&W streams require DF, full over or SY, and cleaning of introduced debris immediately. Partial suspension required for soils protection.

Chasina Study Area Interim Layout NOI Unit 677-305

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

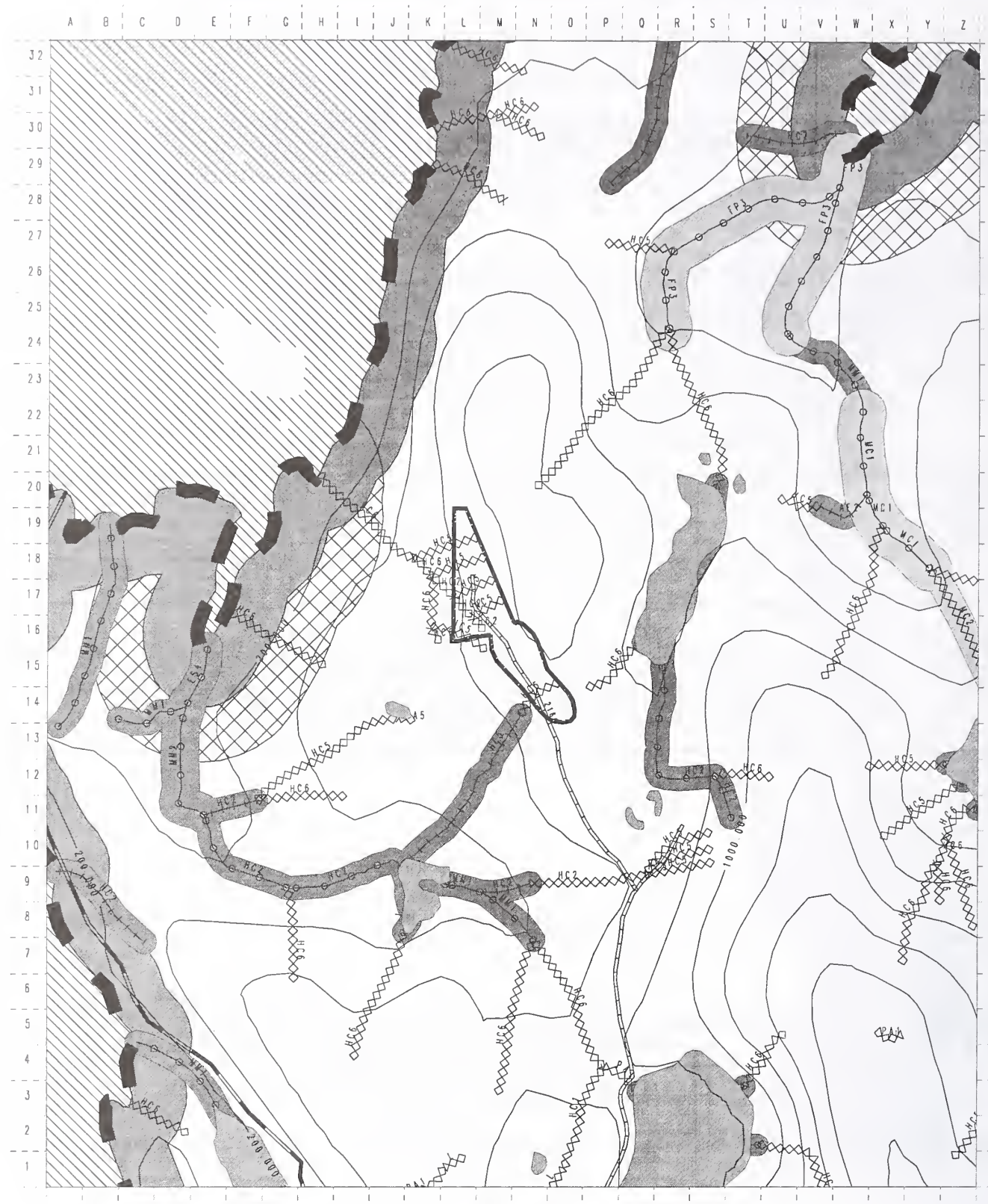
VCU-UNIT#: 677-311 ACRES: 17 VOL: 204 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-490-47 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67703-28, low windthrow risk, portion downhill yarded. Productivity of site is low. Buffers (see fisheries). Steep near lake allows only uneven-aged mgmt: for regeneration and structure retention. Diameter limit - helicopter system, leave all trees less than 26" DBH. Surrounded by low volume. If harvested continue UNEVEN-AGED management for rotation on eastern 1/2. Western 1/2 - Unit design calls for RS regeneration method. Verify roads/and/or landing locations. PLANT 12 AC of YC.
J. Oien 5/96	ROADS: No concerns on helicopter portion. Road should avoid open muskeg where possible.
Field D.J.Landwehr, 10/12/95 ElS R.Johnson	SOILS/WATERSHED: Soils Tolstoi, StNicholas, and McGilvery. Slopes 30 to 100%. Approximately 2 acres on slopes greater than 75% below base of cliff. High MMI soils are common. Partial suspension is required throughout the unit (BMP 13.9). Several small streams require G&W protection (BMP 13.16). See fisheries section on this card. Place backline at the base of cliff below muskeg. Road appears feasible (BMP 14.2). Predominately McGilvery soil, with inclusions of Tolstoi. Slopes 50 to 90%. About 5 acres on slopes greater than 75%. Partial suspension required throughout the unit, believed adequate based field review. Full suspension should be achieved via prescribed helicopter yarding (BMP 13.9). Recommend monitor McGilvery (BMP 11.6). A minimum of a 100 foot buffer should be left on Newt Lake and the stream feeding into Newt Lake (BMPs 12.6, 12.6a). 150 foot width between stream and cliff may eliminate south half of unit. Do not harvest above cliff.
J. Hannon, M. Becker, K. McCartney, J.Wrate 6/27/95	FISHERIES: Stream 1 is a class III green/white. Stream 2 is a class III green/ white. Stream 3 is a class III green/ white. Stream 4 is a class III green/ white. Stream 5 is a class III green/white. Stream 6 is a class III green/ white. Class III green and white streams require directional falling and split yarding,(where practical), or partial suspension over. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16). Along the east half of the unit , a 100' buffer is required around the lake. Stream 9 has adfluvial habitat between the lake and the muskeg. It is a class II AHMU stream that requires a 120' buffer (BMP 12.6).
C.Tighe, T.Belfield 7/26/96	WILDLIFE: Unit was not a high priority for wildlife and was not surveyed in 1995, as it did not meet the habitat requirements called for in the current goshawk protocols.. To maintain adequate snag density and distribution within the VCU, recommend leaving a 0.1 acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees where possible to maintain habitat structure. 7/26/96 TES plant survey found the sensitive plant, Platanthera chorisiana (Choris bog-orchid) in the vicinity of the unit. Sharp-shinned hawk seen soaring above unit along lake. A pair of hairy woodpeckers were seen in the unit's east half (by the lake).
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Half of unit clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use: type C clear-cut. Half of unit uneven-aged mgmt: for regeneration and structure retention. Diameter limit - helicopter system, leave all cedar trees less than or equal to 26" DBH. For G&W streams: directional fall, and split yard (where practical) or partial over. Clean the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Partial suspention required for soils protection.

Chasina Study Area Interim Layout NOI Unit 677-311

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portiot Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

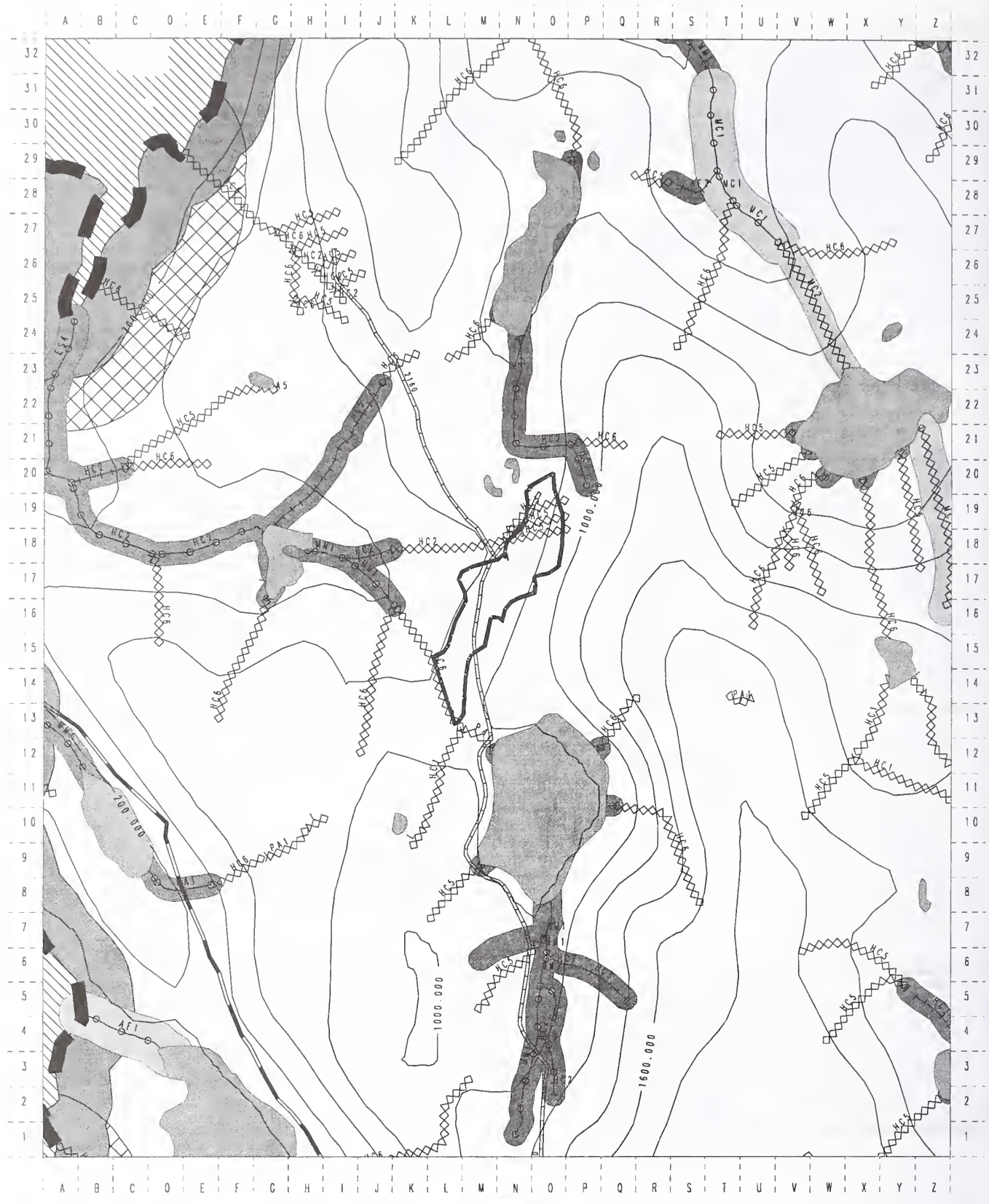
VCU-UNIT#: 677-315 ACRES: 20 VOL: 160 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-490-47 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67703-28, low windthrow risk, portion downhill yarded. Productivity of site is low. Spur above steep areas. Seed tree w/ reserves: Leave 5 TPA of YC of phenotypically superior trees for seed sources to maintain diverse stand composition. (option type D clear-cut)
J. Oien 5/96	ROADS: Road should avoid open muskegs when possible. No end haul material to be placed on wetland areas.
Field D.J.Landwehr, 10/12/95 EIS R.Johnson	SOILS/WATERSHED: Soils Tolstoi, McGilvery, StNicholas and Wadleigh. Slopes 30-90%. Approximately 10 acres on slopes greater than 75%. About 5A forested wetland. About 1 acre of very high MMI soils. Several cliffs in the unit range from 10 to 40 feet high. Areas of McGilvery soils are common on the extremely steep slopes. Six streams for G&W protection. Two streams for O&W protection. Two streams for B&W protection (BMP 13.16). A small 2 acre area of low volume timber should be deleted along the south unit boundary. Partial suspension required in the southwest half of the unit (BMP 13.9). Full suspension required in the north half of the unit (677-328). Delete the extremely steep slopes and very high MMI soils in the northwest part of the unit (BMP 13.5), combine with fish stream buffers. Approximately 1-2 A boulder field with thin McGilvery in southeast corner of unit has been deleted. UNIT REQUIRES CHANGES TO MEET TENTATIVELY SUITABLE CRITERIA. Delete cliffs in middle of unit and adjacent low volume timber. Approximately 4 acres upslope of cliff added as unit 677-328 in northeast portion of unit, and must be helicopter yarded (BMP 13.9). Road appears feasible (BMP 14.2).
S.Deck, K.McCartney, 7/12/96	FISHERIES: Stream 1 is a class III orange/white that requires a slope break buffer (BMP 13.16). Streams 2 , 3, 4, 5, 6, and 7 are class IV green/white. Streams 8 and 10 are class IV green/white tributaries to stream 9. Stream 9 is a class II AHMU (adfluvial habitat) above the lake and requires 120' buffer (BMP 12.6). Above the muskeg, stream 9 is a class IV green/white. The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16). Class III orange/white streams require directional falling, split yarding or full over, and immediate removal of introduced logging debris (BMP 13.16).
M.Pacheco 7/19/95 C.Tighe, T.Belfield 7/26/96	WILDLIFE: Game trails throughout. Bear sign seen in unit and in muskeg to the west of unit. Karst/caves at north end of unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. To provide adequate distribution of snags within the VCU, recommend leaving a snag patch of 0.1 acre or larger for each 10 acres of unit. 7/26/96 TES plant survey done in area: Platanthera chorisiana, (choris bog-orchid), found in the vicinity. Sharp-shinned hawk seen soaring above nearby unit, 377-311, by the lake (to the north). Western toads seen near unit.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Seed tree w/ reserves: Leave 3 TPA of YC of phenotypically superior trees for seed sources to maintain diverse stand composition. Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. B&W streams require minimum of 100 foot buffers. O&W streams require DF, SY, or full suspension, and cleaning of introduced debris immediately . G&W streams require DF, SY (where possible) or partial over, and cleaning of introduced debris before the end of the operating period. Combine extremely steep slopes and M M 1 4 soils in NW part of unit with stream buffers and delete. Delete cliffs and adjacent low volume timber in middle of unit.

Chasina Study Area Interim Layout NOI Unit 677-315

Mapscale 1:15840 (4 inch to Mile)



- Class 1 Stream
- Class 2 Stream
- Class 3 Stream
- Existing Roads
- Proposed Roads
- Unit Boundary
- Salt Water
- Fresh Water Lakes
- Estuary Buffers
- 500' Beach Buffer
- No Cut Stream Buffers by Chantyp
- Partial Cut Stream Buffers by Chantyp

N W E S

Created by Sally Merfeld on November 01, 1996

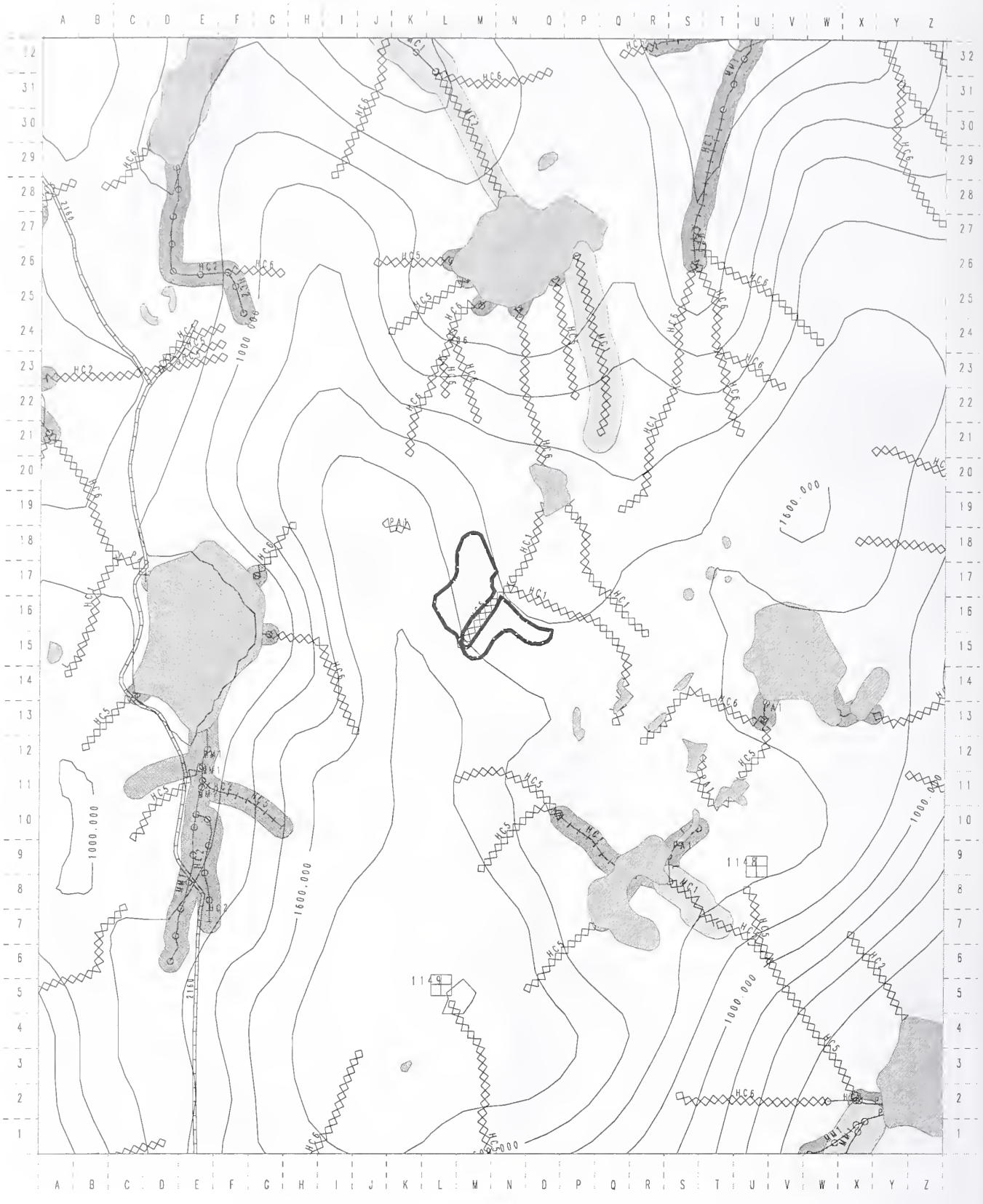
CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 677-319 ACRES:_____ VOL: Unit deleted ALTERNATIVES:_____

PHOTO YR/#:_____ 1/4 QUAD:_____ LOGGING SYSTEMS:_____

Chasina Study Area Interim Layout NOI Unit 677-319

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 04, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

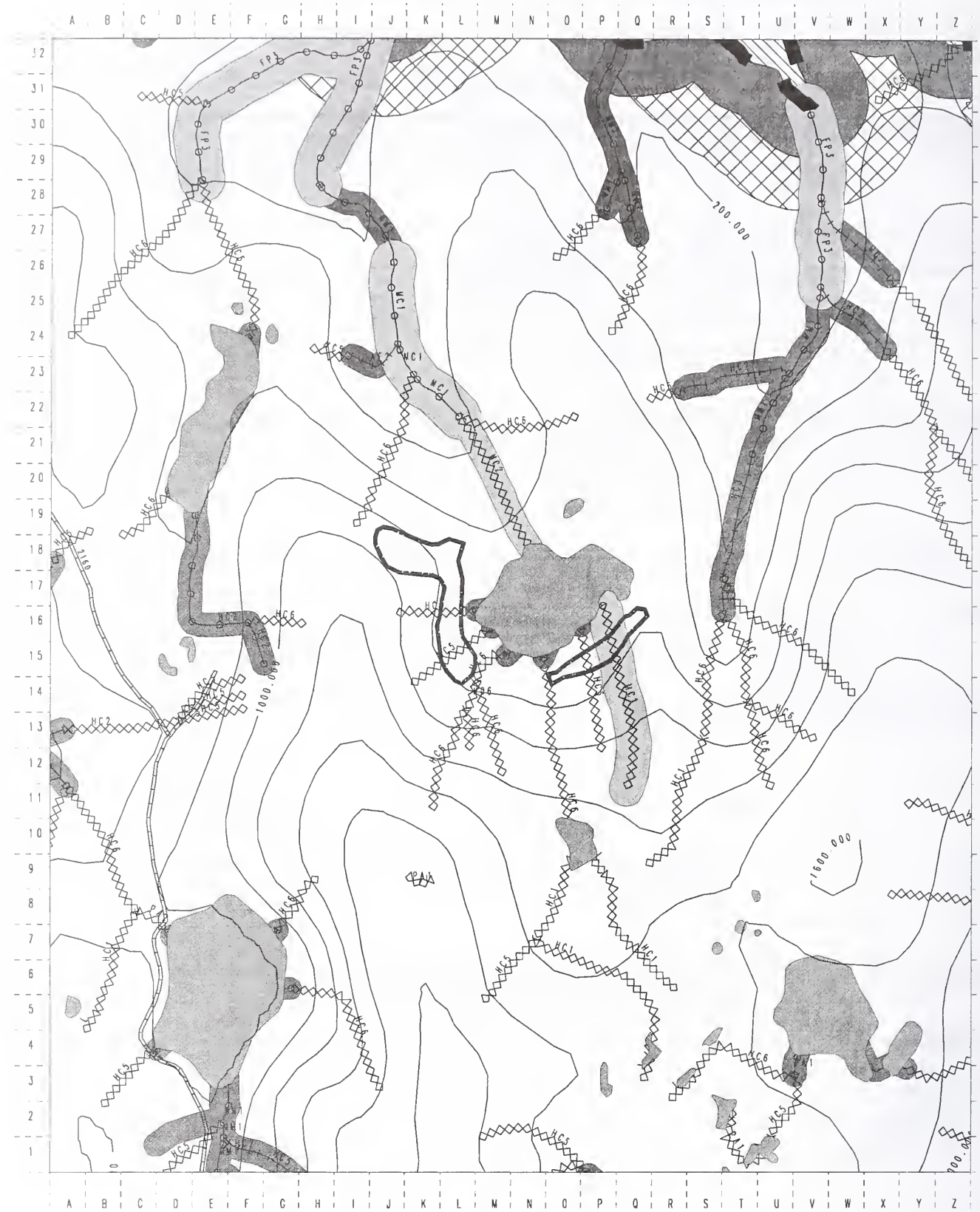
VCU-UNIT#: 677-327 ACRES: 15 VOL: 284 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-490-48 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67703-36, low windthrow risk, high elev. Productivity of site is moderate. Helicopter access through private land. Suspension requirements (see soils or fish). Very difficult terrain, stay off extreme slopes and cliffs. Plant 5 acres of YC.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr, 10/16/95 EIS R.Johnson	SOILS/WATERSHED: Soils McGilvery, StNicholas, Tolstoi, Kaikli, with Wadleigh and Shakan. Slopes 35-130%. Lands including MMI 4, slopes greater than 75%, cliffs, and some McGlivery have been deleted. Unit now about 15 A. Approximately 5 acres of McGilvery soil scattered throughout the unit. About 10 acres are high MMI soils. Minimum of partial suspension is required. Helicopter yarding is prescribed and should provide full suspension (BMP 13.9). Locate the unit boundary below the first cliffs in the east and southwest portions of the unit. A 150 to 200 foot buffer on the lake (BMPs 12.6, 12.6a, 13.5). G&W protection on streams 2 through 7 (BMP 13.16). Place unit boundary on streams 4 and 7. See fisheries section of this card.
D. Kuntzsch, K. Buckley, 8/17/95	FISHERIES: Recommend that the lake adjacent to this unit be given a minimum 150' no cut buffer due to unstable soils and steep slopes on the East, South, and West sides of the lake (BMP 12.6). Stream 2 is a class III green/white. Stream 3 is a class III green/white. Stream 4 is a class III green/white. Stream 5 is a class III green/ white. Stream 6 is a class III green/ white. Stream 7 is a class III orange/ white that requires a slope break buffer plus 30' (BMP 13.16). The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman 7/96	WILDLIFE: To provide for adequate snag density and distribution within the VCU, recommend leaving a 0.1 acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees where possible to maintain habitat structure. This unit did not rate as a high priority unit, due to steepness, for wildlife. Portions of this unit were steeper then what is recommended for goshawk surveys according to the current protocols. It was not surveyed by wildlife in 1995 or 1996.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Diameter limit - helicopter system, leave all species less than 24" DBH. G&W streams: DF, SY (where practical) or partial over. Clean stream of introduced debris before the end of the operating period or before the yarder leaves the area.

Chasina Study Area Interim Layout NOI Unit 677-327

Mapscale 1:15840 (4 inch to Mile)



- Class 1 Stream
- Class 2 Stream
- Class 3 Stream
- Existing Roads
- Proposed Roads
- Unit Boundary
- Salt Water
- Fresh Water Lakes
- Estuary Buffers
- 500' Beach Buffer
- No Cut Stream Buffers by Chantyp
- Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

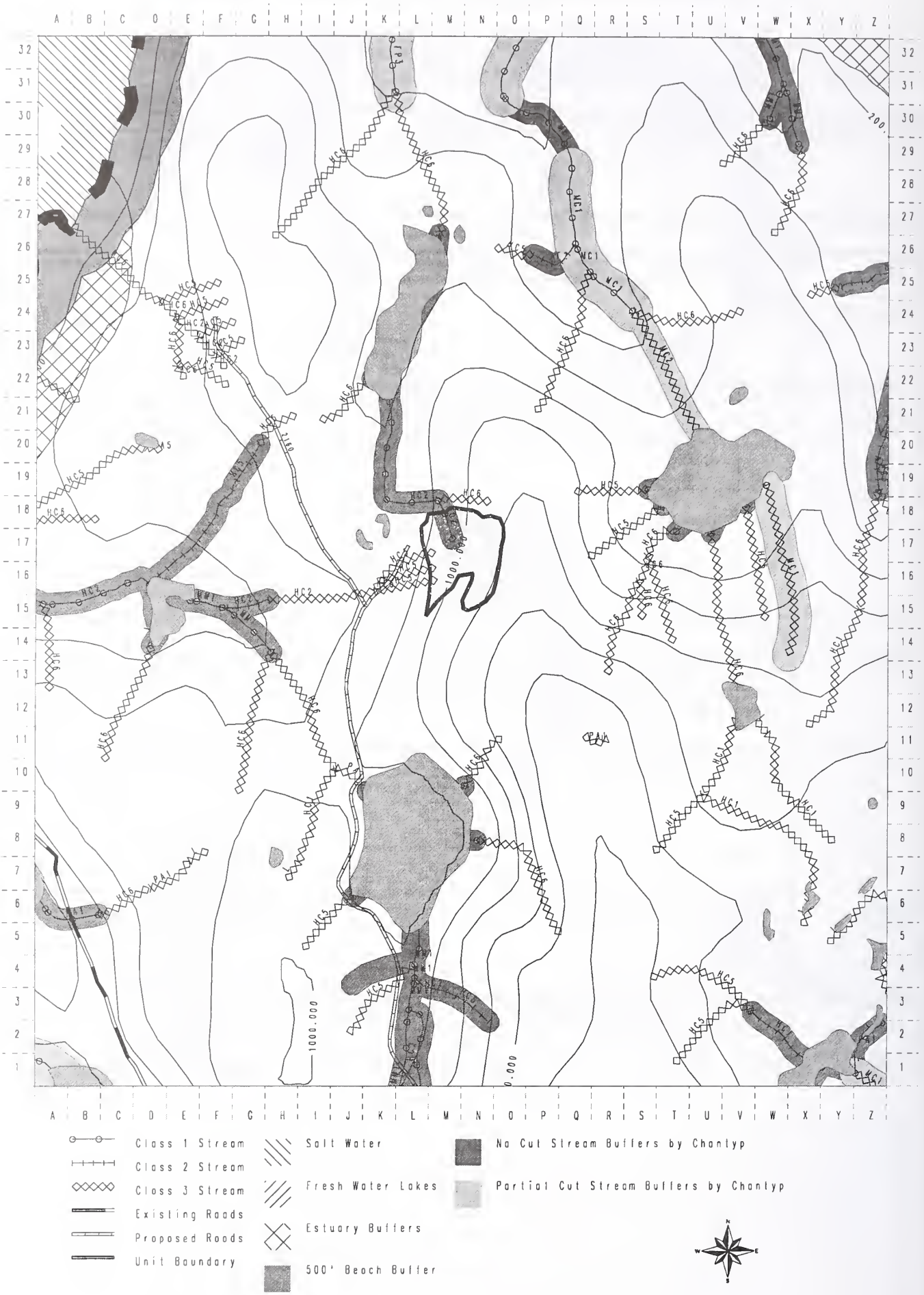
VCU-UNIT#: 677-328 ACRES: 14 VOL: 189 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-490-47 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: Low windthrow risk. Productivity of site is low - moderate. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to steep slopes. Partial cut buffer. Uneconomic, low volume area surrounding.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr, 10/12/95 EIS R.Johnson	SOILS/WATERSHED: Expansion up slope of cliff and low volume timber in NE end of 677-315. Partial cut by helicopter includes harvest of large suitable areas between cliffs, but no harvest on small cliffs (BMP 13.9).
K. McCartney, S. Deck, 7/12/96	FISHERIES: Stream 3 isa class IV green/white. Stream 4 is a class IV green/ white. Stream 5 is a class IV green/ white. Stream 6 is a class IV green/ white. Stream 8 is a class IV green/ white. Stream 9 is a class IV green/ white. Stream 10 is a class IV green/ white. The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman 7/96	WILDLIFE: To provide for adequate snag density and distribution within the VCU, recommend leaving a 0.I acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees where possible to maintain habitat structure. This unit did not rate as a high priority unit, due to elevation, for wildlife. The elevation of the unit is above the criteria in the current goshawk protocol. It was not surveyed by wildlife in 1995 or 1996.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Seed tree w/ reserves: Leave 3 TPA of YC of phenotypically superior trees for seed sources to maintain diverse stand composition. Harvest large areas between cliffs, but not on small cliffs.

Chasina Study Area Interim Layout NOI Unit 677-328

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Werfeld on November 01, 1995

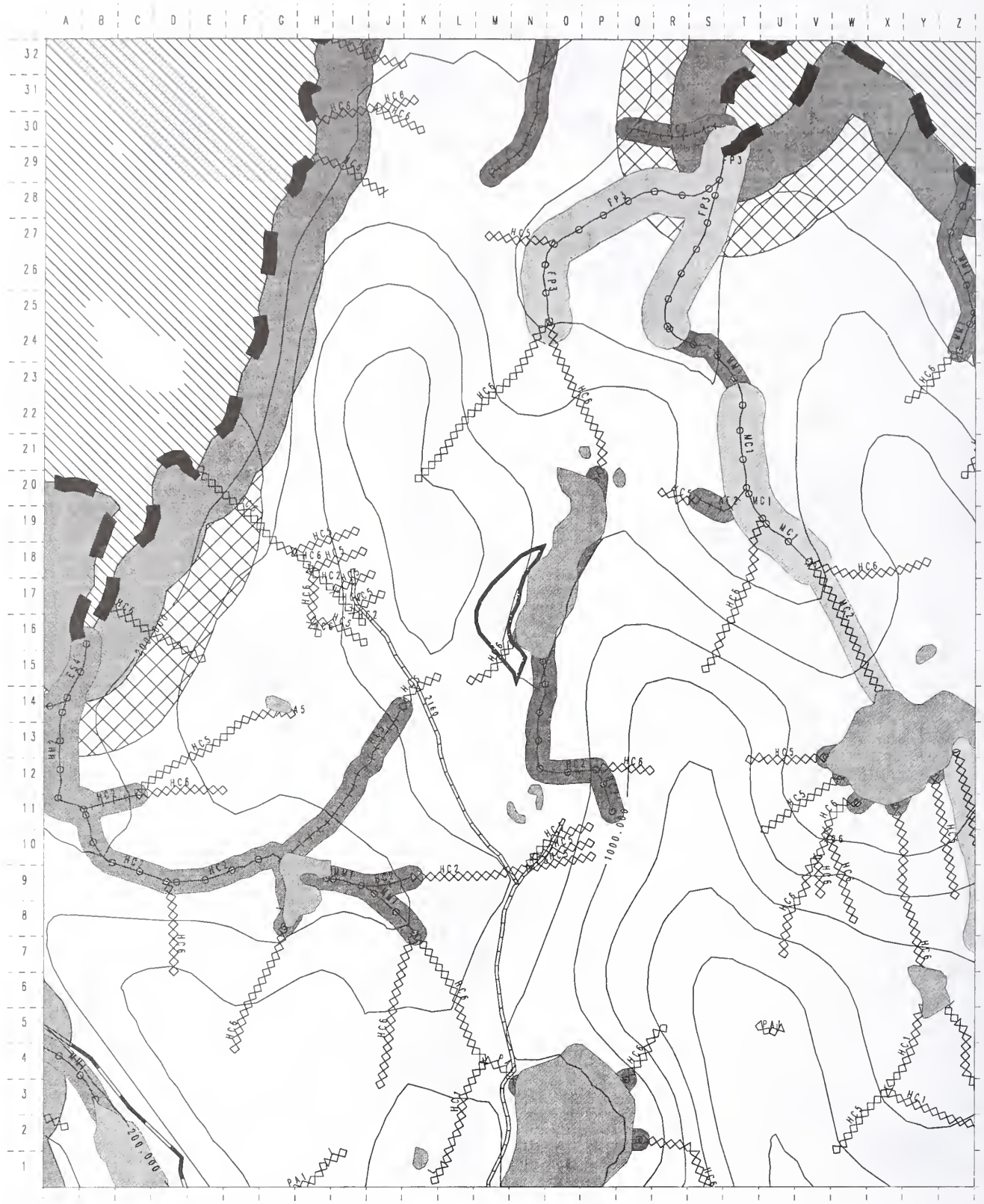
CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 677-501 ACRES:_____ VOL: Unit deleted ALTERNATIVES:_____

PHOTO YR/#:_____ 1/4 QUAD:_____ LOGGING SYSTEMS:_____

Chasina Study Area Interim Layout NOI Unit 677-501

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chanlyp
Partial Cut Stream Buffers by Chanlyp

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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

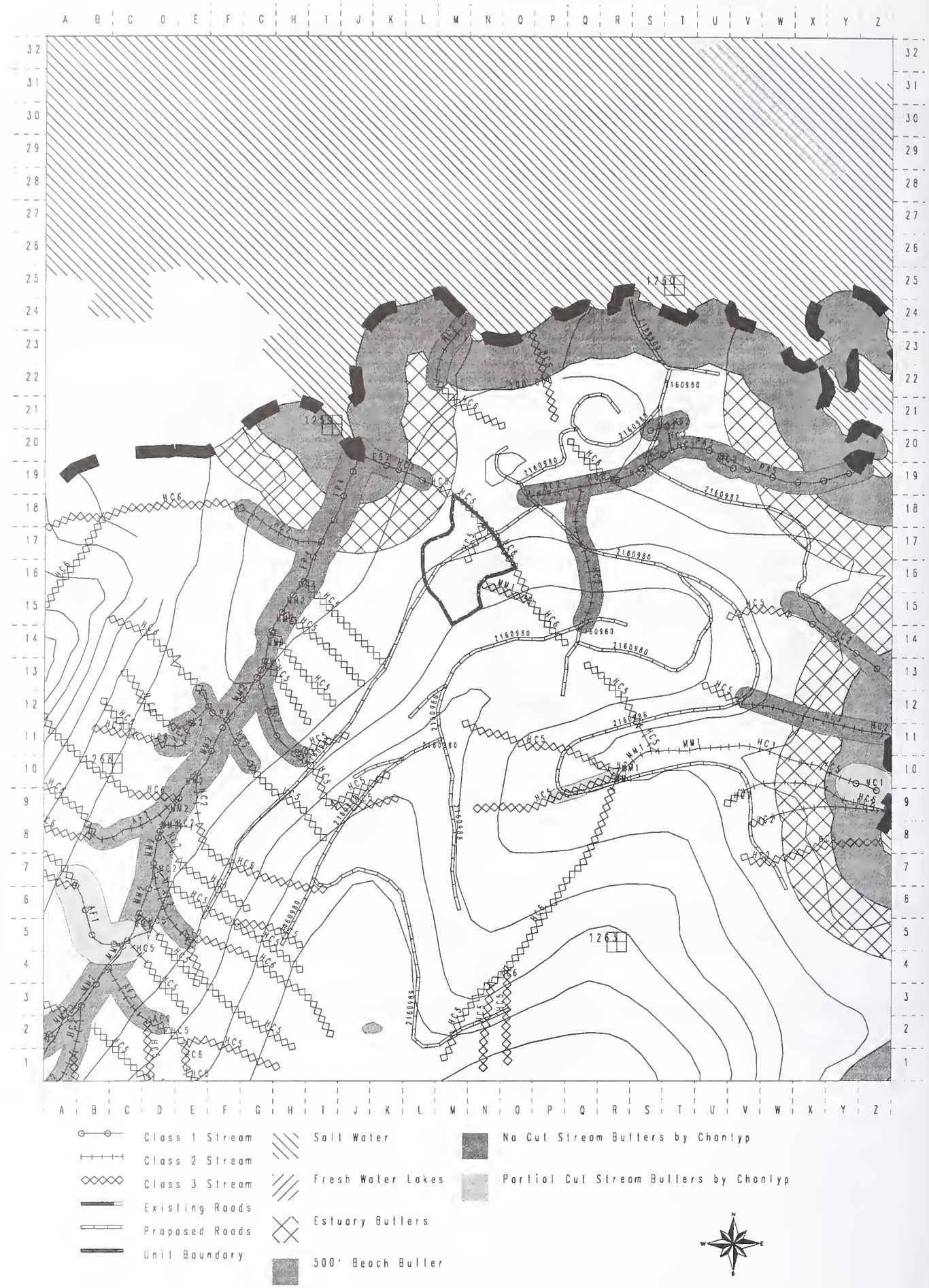
VCU-UNIT#: 678-301 ACRES: 14 VOL: 468 MBF ALTERNATIVES: 5,6

PHOTO YR/#: '91-590-65 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS /HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 678- , low windthrow risk, portion downhill yarded. Productivity of site is high. Option to extend unit uphill to meet road for uphill yarding potential. Buffers (see fisheries). Leave setting between adjacent unit. Suspension requirements (see soils or fish). Unit changed to provide proportionality of volume classes. Field checking alternative regeneration methods.
J. Oien 5/96	ROADS: Avoid Karst formations when possible.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 32D, 32E (StNicholas 35-75%). Partial suspension for MMI3 and forested wetland (BMPs 12.5, 13.9). Third order watershed (BMP 12.1)
D. Kuntzsch, M. Becker, 9/7/95	FISHERIES: Stream 1 is a class III orange/ white that requires a slope break plus 25' buffer (BMP 12.6). Stream 2 is a class III green/ white. Stream 3 is a class III green/white. The green and white streams require directional falling, and split yarding (where practical) or partial over. Clean stream of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16). Recommend deletion of the bowl in the southeast corner of the unit.
C.Tighe, J. Wrate, J.Baichtal 6/12/95 B.Johnston, G.Lawton 5/23/96	WILDLIFE: Deer sign within unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/23/96 -Great-horned owl heard in unit. Maintain 1000 foot estuary buffer.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Sinking karst stream along NW unit boundary. Pull back unit boundary to protect water quality. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension required for soils protection. Unit dropped from the preferred alternative due to proportionality based on acres.

Chasina Study Area Interim Layout NOI Unit 678-301

Mapscale 1:15840 (4 inch to Mile)



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CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 678-303 ACRES: 45 VOL: 1471 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-20 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS /HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67802-136, low windthrow risk, portion downhill yarded. Productivity of site is high. Buffers (see fisheries). KARST POTENTIAL. Partial cut buffer. Retain stand structure for wildlife where feasible.
J. Oien 5/96	ROADS: Avoid Karst formations when possible.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 32D (StNicholas 35-60%) and 87CD (Grindall - StNicholas 5-60%). Partial suspension for MMI3 and forested wetlands (BMPs 13.9, 12.5). Reported karst in unit, could alter prescription. Mapping and photos indicate possible deletions open muskeg center E portion (may be a blowdown patch). More rugged topography than mapped NE and W portions, could be confusion with map unit 29EF (McGilvery).
J. Hannon, M. Becker, 6/26/95	FISHERIES: Stream 1 is a class I blue/white that requires a 150' TTRA buffer due to steep slopes (BMP 12.6). Stream 2 is a class I blue/white that requires a 120' TTRA buffer (BMP 12.6). The road will require fish passage and timing (BMP 14.14).
C.Tighe, J.Wrate 6/12/95. C.Tighe, B.Johnston, A. Mueller 5/24/96	WILDLIFE: This unit has been identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Lots of blowdown in unit as well as steep rock outcrops and slides. The unit has an open understory. Maintain 500 foot beach and 1000 foot estuary buffer.
J.Baichtal 5/15/96 10/22/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Numerous sinks reported by engineering recon. Unit is predominately underlain by massive to thin-bedded marble interbedded with phyllite. Karst features are developed throughout unit. Soils are a mosaic of shallow to deep residual soils and shallow organic soils atop the epikarst ridges. The majority of the unit is moderate vulnerability karstlands, partial suspension required within unit as a minimum to minimize shallow soil displacement. Yarding should be across karst ridges not along to help minimize soil displacement. It is recommended that the knob in the center of the unit be deleted from the unit due to well developed karst features and the cliffs bounding the knob on two sides. During road construction, surface runoff should not be directed in collapse features and sinkholes adjacent to the alignment. Quarry placement and development should be approved by both Forest Geologist and District Fishery Staff. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension required for soils protection.

Chasina Study Area Interim Layout NOI Unit 678-303

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Butters by Chantyp
Portiol Cut Stream Butters by Chantyp

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Created by Sally Merfeld on November 01, 1998

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

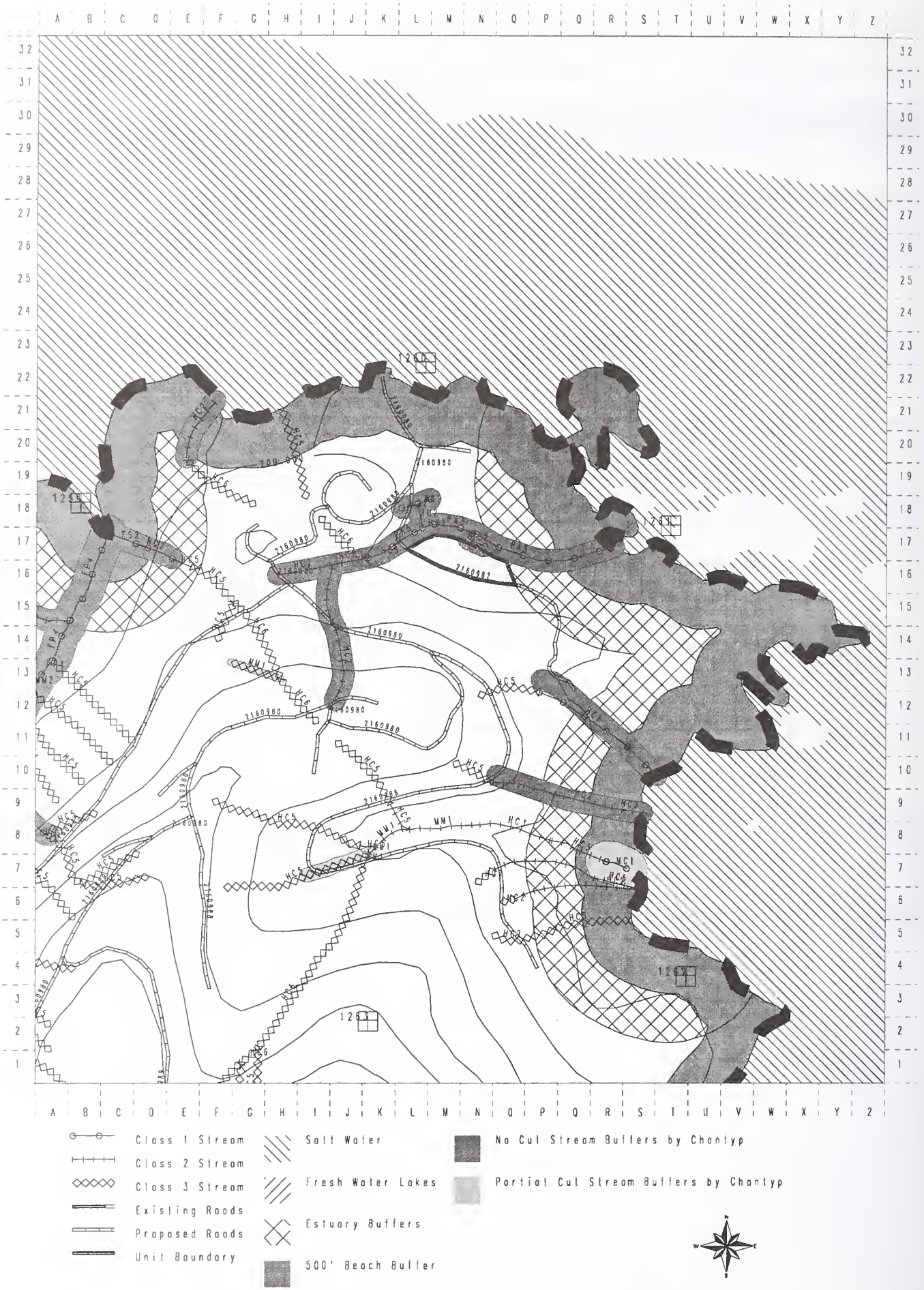
VCU-UNIT#: 678-305 ACRES: 6 VOL: 216 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-21 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67802-144, low windthrow risk. Productivity of site is high. Buffers (see fisheries). Partial cut buffer. Field checking alternative regeneration methods. Wildlife structure desired. Maintain setting width between units.
J. Oien 5/96	ROADS: Avoid Karst formations when possible.
R.Johnson, 8/04/95	SOILS/WATERSHED: Soils mapped 87CD (Grindall - StNicholas 5-60%). Partial suspension MM13 and forested wetlands; delete if open muskeg (BMPs 12.5, 13.9), but open muskeg not visible on photo. Unit on ground may lie more upslope on lands mapped as 32E/29EF.
M. Becker, J. Hannon, 6/26/95	FISHERIES: Stream 1 is a class I blue/ white TTRA that requires a 150' buffer due to steep slopes (BMP 12.6). Stream 2 is a class I blue/ white TTRA that requires a 100' buffer (BMP 12.6). The estuary requires a 1000' buffer.
C.Tighe, A.Mueller 5/24/96 Baichtal 10/1/96	WILDLIFE: Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit was not surveyed in 1995. Maintain 1000 foot estuary buffer. Incredible bear usage in early October because of pink and coho run.
J.Baichtal 10/22/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Numerous sinks reported by engineering recon. Unit is predominately underlain by massive to thin-bedded marble interbedded with phyllite. Karst features are developed throughout unit. Soils are a mosaic of shallow to deep residual soils and shallow organic soils atop the epikarst ridges. One cave located along the southern unit boundary. Large discrete karst features throughout unit. Karst springs well up along northern unit boundary and feed through beaver pond complex into anadromous stream. Steep carbonate cliff/slope along southern unit boundary. With the density of karst features, the cave, and associated fisheries, this unit would be entirely of high vulnerability karst. Based on this, it is recommended that all of the unit be excluded from harvest as per the standards and guidelines outlined in the RSDEIS for the TLMP. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension required for soils protection. Possibly combine with 678-312. Recommend deletion of unit to meet standards and guidelines for karst protection.

Chasina Study Area Interim Layout NOI Unit 678-305

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

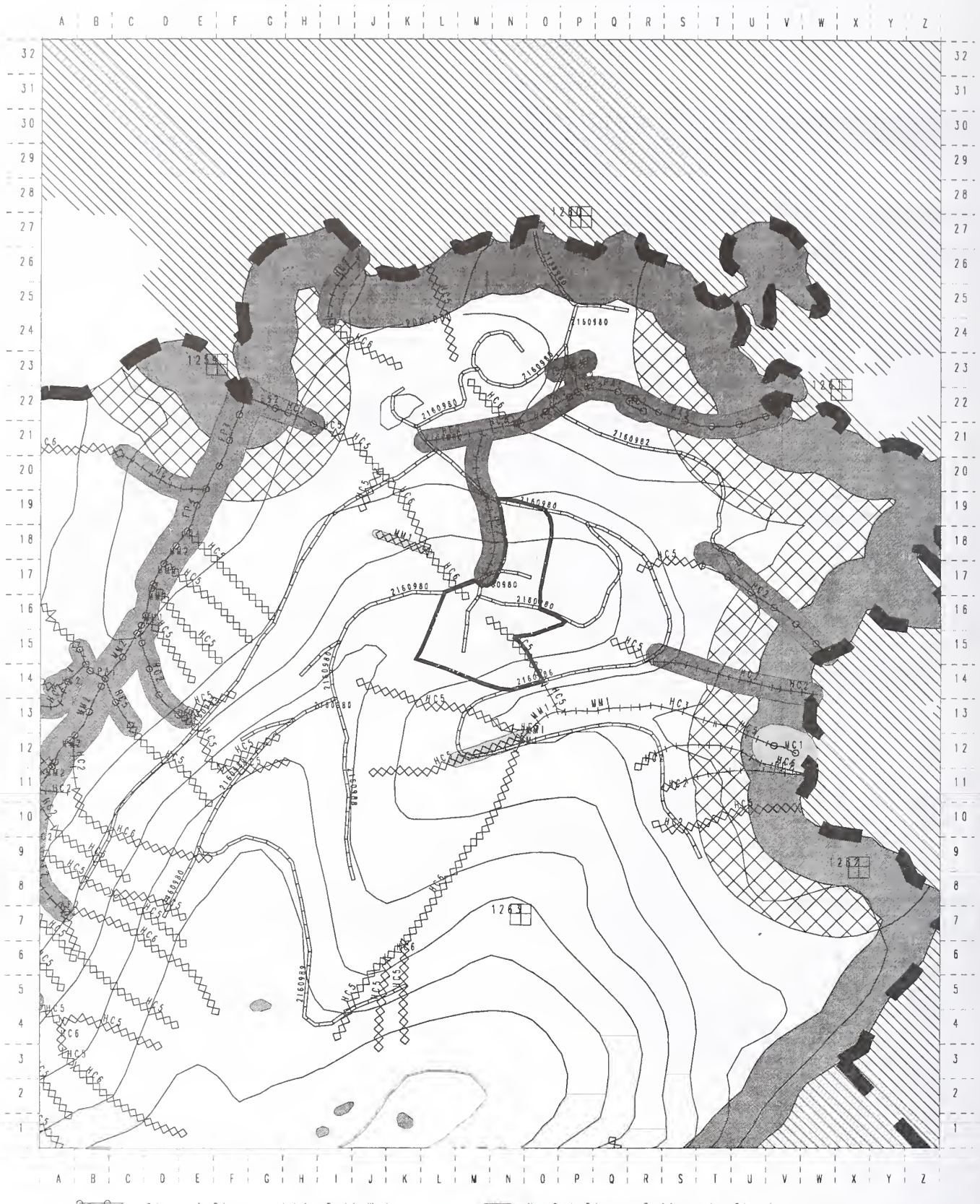
VCU-UNIT#: 678-310 ACRES: 29 VOL: 821 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-65 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67802-137, high windthrow risk. Productivity of site is high. Partial cut buffer. Field checking alternative regeneration methods. Maintain setting width between units. High mistletoe deflect.
J. Oien 5/96	ROADS: Avoid karst formations when possible.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped primarily 32E (StNicholas 60-75%) with small amount 32C (StNicholas 5-35%). Partial suspension forested wetlands and MM13 (BMPs 12.5, 13.9). Reported cliffs, which corresponds with photos and confusion mapping 29EF. These may need protection or deleting. W portion in third order watershed (BMP 12.1).
K. McCartney, J. Hannon, 6/21/95	FISHERIES: Recommend that the lower boundary of the unit be no lower than 400' elevation (approximate road line). Stream 1 is a class II orange/ white stream that requires a 100' AHMU buffer (BMP 12.6). This stream will require fish passage and timing (BMP 14.14). Stream 2 is a class III green/ white. Stream 3 is a class III green/ white. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris before the end of the operating season or before the yarder leaves the area (BMP 13.16)
M.Dillman, J.Wrate 6/27/95 C.Tighe, A. Mueller 6/28/96	WILDLIFE: Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Snags were seen in unit.
J.Baichtal 10/22/96	GEOLOGY/MINERALS:No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Karst cliff reported by engineering recon. Northern edge of unit is by marble. Southern half of unit was not reconned by Forest Geologist, there may be karst developed there, resource concerns should be addressed during layout. Very steep marble slopes/cliffs (i.e. >100%) have very shallow organic soils atop them. These areas would fall into high vulnerability karstlands or McGilvery Soils. Based on this, it is recommended that the cliff portion of the unit be excluded from harvest as per the standards and guidelines outlined in the RSDEIS for the TLMP. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: Use type A clear-cut. Partial suspention required for soils protection. Dropped steep areas to the south and northeast.

Chasina Study Area Interim Layout NOI Unit 678-310

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

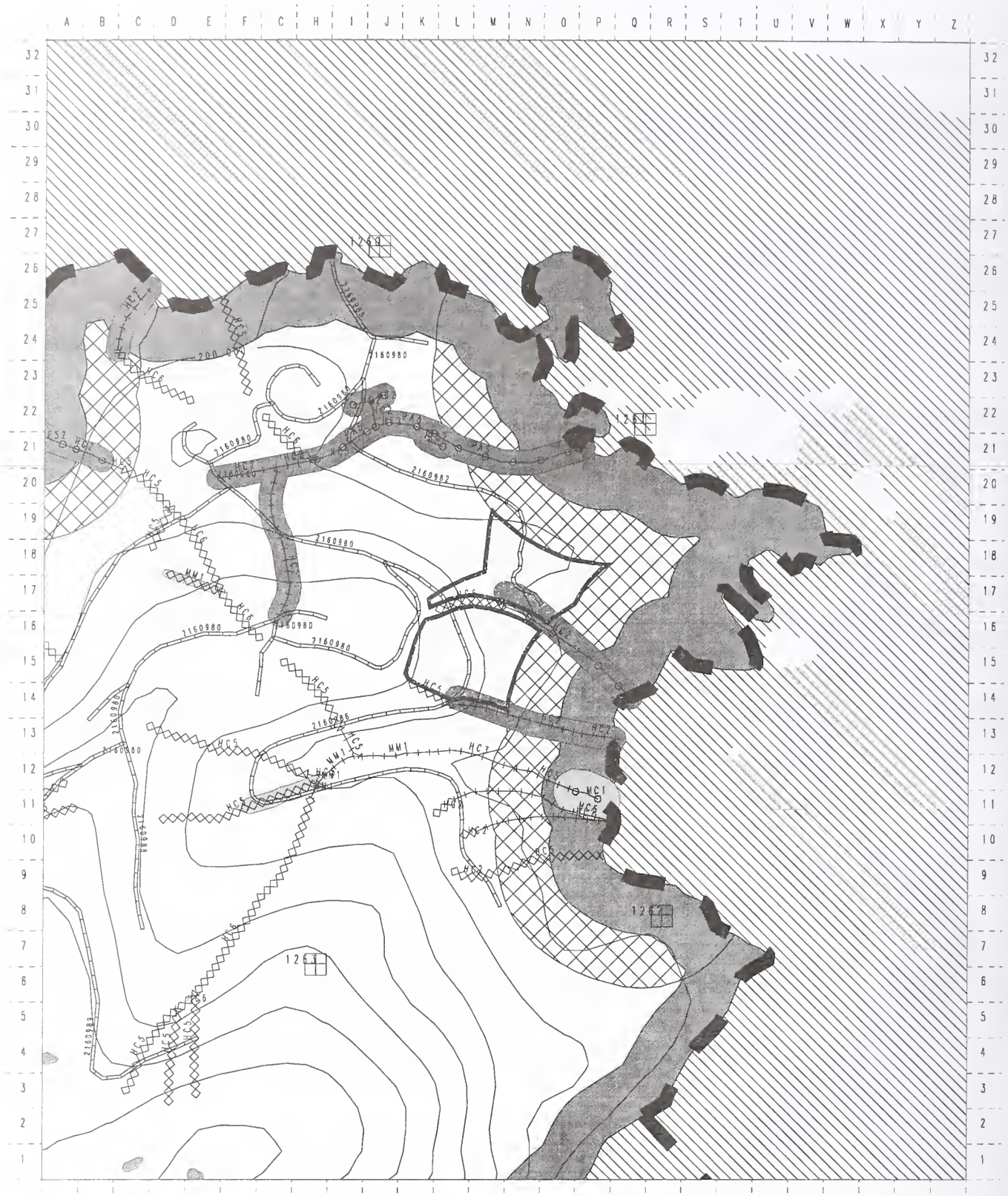
VCU-UNIT#: 678-312 ACRES: 33 VOL: 891 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-21 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67802-138, high windthrow risk. Productivity of site is moderate. Partial cut buffer. Maintain setting width between units. Possibly combine with unit 305.
J. Oien 5/96	ROADS: Avoid Karst formations when possible.
field P.Krosse, 8/01/95 EIS R.Johnson	SOILS/WATERSHED: Soils McGilvery, Remedios, Kupreanof. Slopes 65-85%, plus rock outcrops. Partial suspension for MMI3 and McGilvery (BMP 13.9; TLMP 1991). Limited field review, but concern potential greater than 41% McGilvery, and may need to delete or modify unit if so (TLMP 1991). Concerns blowdown if 100' buffer stream center of unit. Karst reported N end.
K. McCartney, J. Hannon, 6/20/95	FISHERIES: This unit will require a 1000' estuary buffer. Stream 1 is a class III green/ white that requires directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris before the end of the operating season or before the yarder leaves the area (BMP 13.16). Stream 2 is a class III orange/ white that needs a 100' buffer due to its location and proximity to fish habitat (BMP 12.6).
D.Parker, J.Wrate, M.Pacheco 6/21/95 C.Tighe, A. Mueller 5/23/96	WILDLIFE: Deer forage and browsed plants were seen throughout unit. Bear sign seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/23/96 Wolf scat seen in unit with shells in it. Estuary requires a 1000 foot buffer.
J.Baichtal 5/15/96 10/22/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Karst cliff reported by engineering recon. Not visited by Forest Geologist. Suggest Geologist / Soils join visit. Moderate vulnerability karst as a minimum. Partial suspension required on karst portion of unit as a minimum. 10/96 still did not get to unit but based on adjacent geology karst is probable and steep marble cliffs may be found in unit. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 678-312

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
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Created by Sally Merfeld on November 01, 1998

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

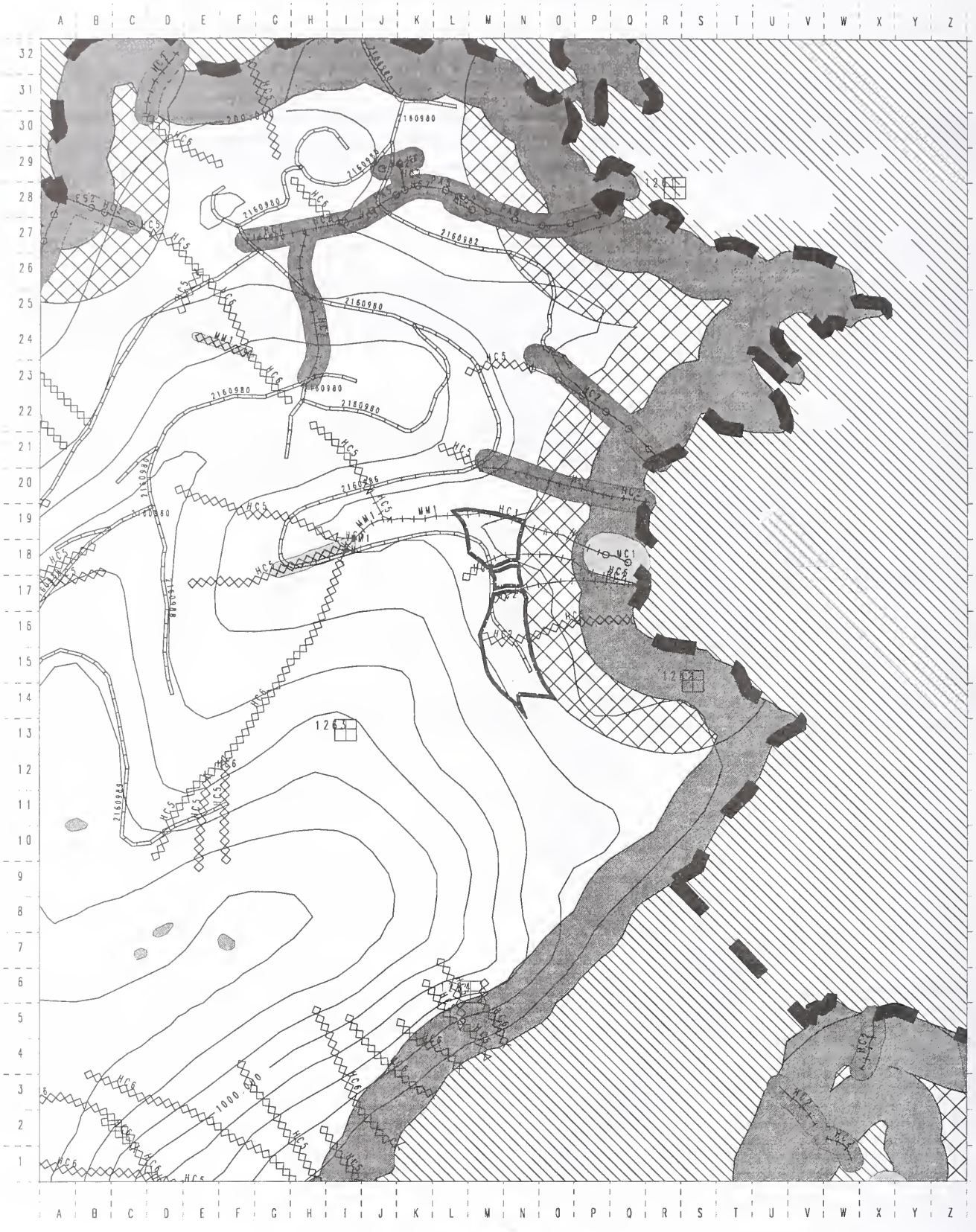
VCU-UNIT#: 678-314 ACRES: 15 VOL: 378 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-21 1/4 QUAD CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 6/96	SILVICULTURE/TIMBER: 67802-132, Mod. windthrow risk. Productivity of site is high. Partial cut buffer. Field checking alternative regeneration methods. Keep unit narrow for windfirmness. Maintain setting width between units. Potential option: corridor thin settings.
J. Oien 5/96	ROADS: Avoid Karst formations
field P.Krosse, 8/01/95 EIS R.Johnson	SOILS/WATERSHED: Similar to 678-312. Soils 50% McGilvery; 40% Kupreanof, Remedios; 10% StNicholas, Kaikli. Slopes 65-80%, with 25-35% on lower backslopes, which are wetter. Partial suspension MMI3, forested wetlands, and McGilvery (BMP 13.9; TLMP 1991). Believed 50% McGilvery, so may need to delete or modify unit. Unit dissected by jointed bedrock. Joints hold drainages and concave wetlands.
K. McCartney, J. Hannon 6/21/95 K. McCartney, K. Kitchel, 6/20/96	FISHERIES: Stream 1 in the unit is a class III orange/ white. Stream 3 is a class IV green/ white. Stream 4 is a class IV green/ white. Stream 5 is a class IV green/ white. The orange/ white stream requires a slope break plus 25' buffer (BMP 13.16). The green/ white streams require directional falling, and split yarding(where practical) or partial over. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate, M. Pacheco 6/12/95 C.Tighe, A. Mueller 5/23/96	WILDLIFE: Deer browse and pellets, and game trails seen throughout area. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Estuary requires 1000 foot buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspention required.

Chasina Study Area Interim Layout NOI Unit 678-314

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

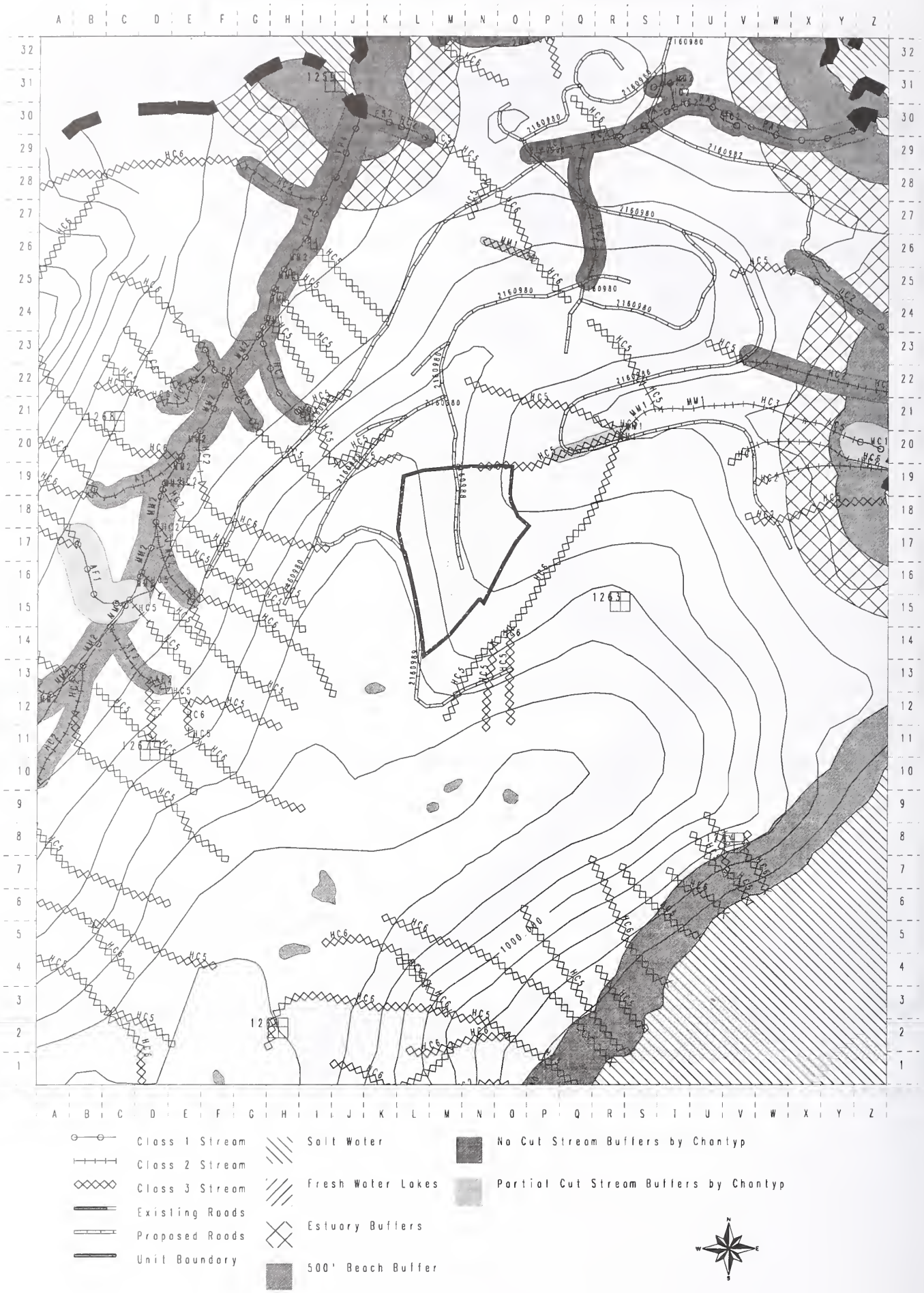
VCU-UNIT#: 678-316 ACRES: 37 VOL: 1332 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-65 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67802-131, low windthrow risk, mod. to high elev. Productivity of site is high. Unit design calls for clear-cut regeneration method. Verify roads/and/or landing locations. Maintain setting width between units. Dropped 2 acres of cliffs-weather boundary.
J. Oien 5/96	ROADS: Avoid Karst formations when possible.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 32E (StNicholas 60-75%). Corresponds to partial suspension for MM13 and forested wetland (BMPs 12.5, 13.9). Possible confusion with map unit 29EF as upper portion to W reported very steep. Field review planned to verify. GIS shows W edge in third order watershed (BMP 12.1); does not correspond to location on ground.
D. Kuntzsch, M. Solomon, S. Deck, 6/20/96	FISHERIES: Stream 1 is a class IV green/ white. Stream 2 is a class III orange/ white. Stream 3 is a class III orange/ white. The green/ white stream requires directional falling, and split yarding (where practical) or partial over. Clean stream of introduced debris before the end of the operating season or before the yarder leaves the area (BMP 13.16). The orange/ white streams require directional falling, split yarding or full suspension, and immediate cleaning of introduced debris (BMP 13.16).
M.Dillman, J.Wrate 6/27/95 C.Tighe, B.Johnston, A. Mueller 6/13/96	WILDLIFE: Bear sign seen in area. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/13/96 Deer sign- beds, pellets, and browse seen in unit. Unit also had game trails throughout. Bear scat and dug up skunk cabbage seen. Wolf scat also seen in muskeg. Karst along ridge. Great goshawk habitat.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspention required. Dropped 2 acres of cliffs - feather boundry.

Chasina Study Area Interim Layout NOI Unit 678-316

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

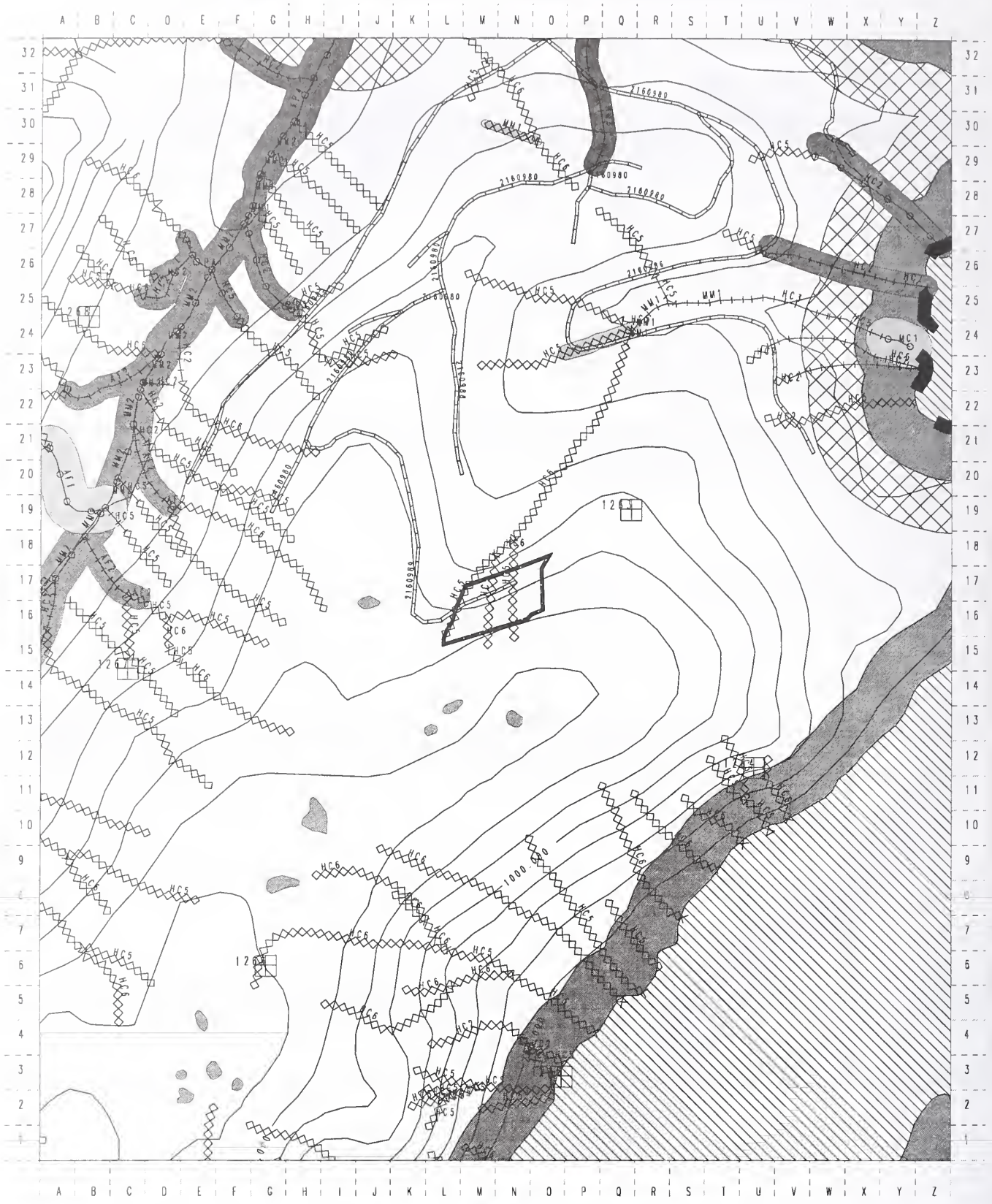
VCU-UNIT#: 678-319 ACRES: 10 VOL: 237 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-64 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67802-132, high windthrow risk, high elev. mod. mistletoe present. Productivity of site is moderate. Unit design calls for clear-cut regeneration method. Verify roads and/or landing locations. Maintain setting width between units. Potential to add on to the west on flat. Drop top of unit and stay off oversteepen slopes to north. Maintain cedar component through planting.
J. Oien 5/96	ROADS: Avoid karst formations whenever possible.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 32E (StNicholas 60-75%). Partial suspension for MM13 and forested wetland (BMPs 12.5, 13.9). Believed continued confusion with 29EF based photos and field review others. Dropped S third unit based upon observations made by silviculture and fisheries: gorge 130%, unstable, cliff, landslides. N boundary reported as V-notch. Recommend full suspension, which is obtainable if helicopter yarded. Due to possible limitations to road access (BMPs 13.9, 14.1), may need to change logging system to helicopter yarding.
K. McCartney, M. Becker, C. Tighe, J. Wrate, D. Kuntzsch, J. Frank, J. Baichtal, 6/13/95	FISHERIES: Stream I is a class III green/ white. Stream 2 is a class III green/ white. Stream 3 is a class III green/ white. The green/ white streams require directional falling, and split yarding (where practical) or partial over. Clean streams of introduced debris before the end of the opperating period or before the yarder leaves the area (BMP 13.16).
C.Tighe, J. Wrate, M. Becker, K. McCartney 6/13/95 C.Tighe, B.Johnston, A. Mueller 6/13/96	WILDLIFE: Recommend leaving live reserve trees and snags to maintain habitat structure and snag density. 6/13/96 Deer sign in unit.
J.Baichtal 5/15/96 10/22/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Well developed epikarst / sink holes / and small cave along upper unit boundary. The karst portion of the unit is of high vulnerability. The karst portion of the unit should be removed from the unit as per the standards and guidelines outlined in the RSDEIS for the TLMP. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut. Leave less than or equal to 14" cedars. Full suspension required for soils protection.

Chasina Study Area Interim Layout NOI Unit 678-319

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

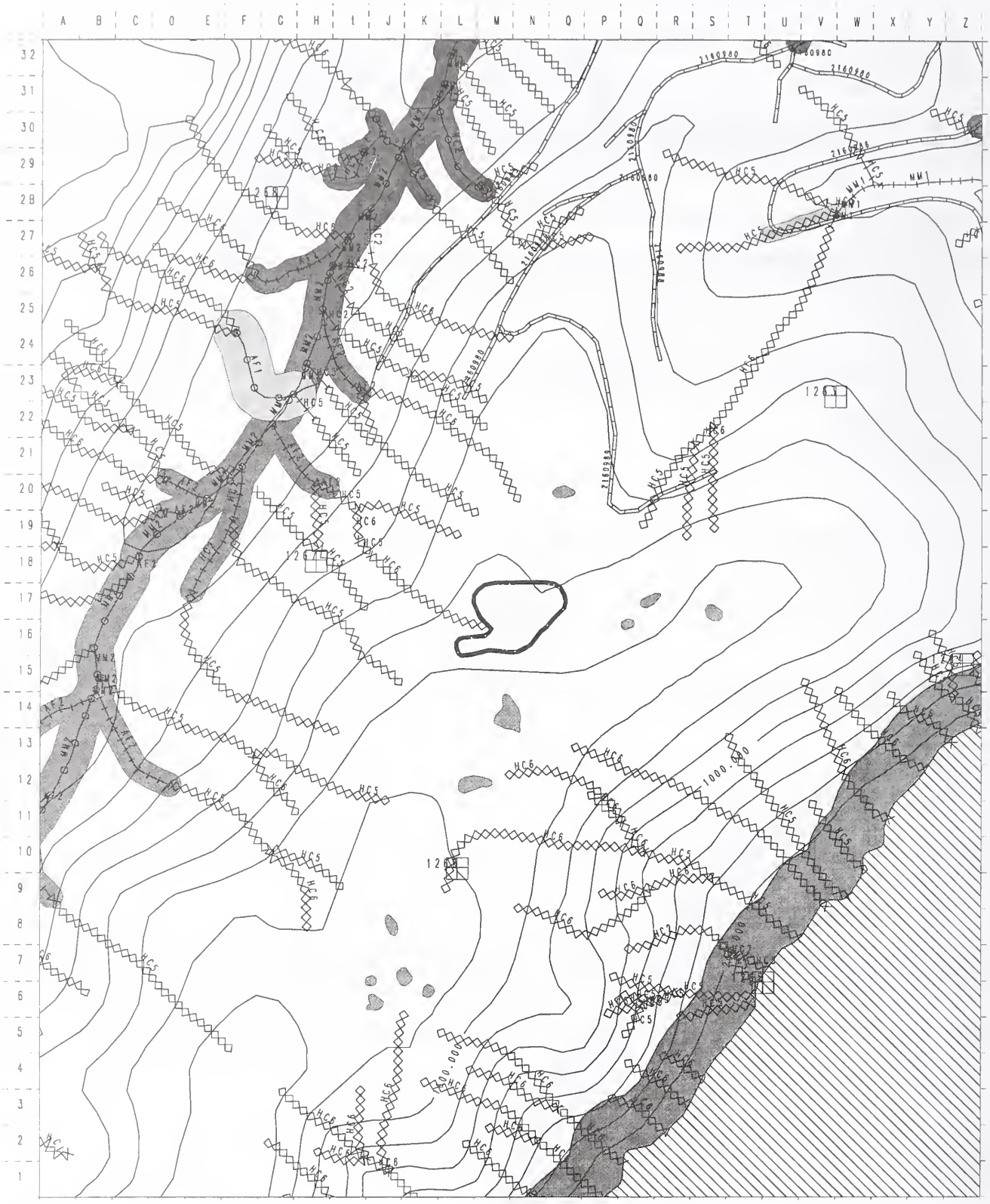
VCU-UNIT#: 678-324 ACRES: 10 VOL: 225 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '91-590-64 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67802-127, low windthrow risk, high elev. Productivity of site is moderate. 2-3 layer canopy, regeneration abundant. Unit extended to the west. Only economical if adjacent units harvested.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 32 E (StNicholas 60-75%). Partial suspension for MMI3 and forested wetland (BMPs 12.5, 13.9); helicopter prescribed. Third order watershed (BMP 12.1).
J. Frank, M. Becker, K. Mc-Cartney, D. Kuntzsch, J. Ba-ichtal, C. Tighe, J. Wrate, 6/13/95	FISHERIES: This unit has no fisheries concerns.
C.Tighe, J.Wrate D. Kuntzsch, J. Frank, M. Becker 6/13/95 C.Tighe, B.Johnston, A. Mueller 6/13/96	WILDLIFE: Few snags. Trees spaced out. Deer sign and browse rare. Recommend leaving live reserve trees and snags to maintain habitat structure and snag density.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Overstory removal. Leave all unmerchantable trees standing. Leave I cedars/acre for seed. Partial suspension required for soils protection.

Chosino Study Area Interim Layout NOI Unit 678-324

Mapscale 1:15840 (4 inch to Mile)


A B C O E F G H I J K L M N O P Q R S T U V W X Y Z
32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
HC5
HC6
HF1
HF2
HM1
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CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

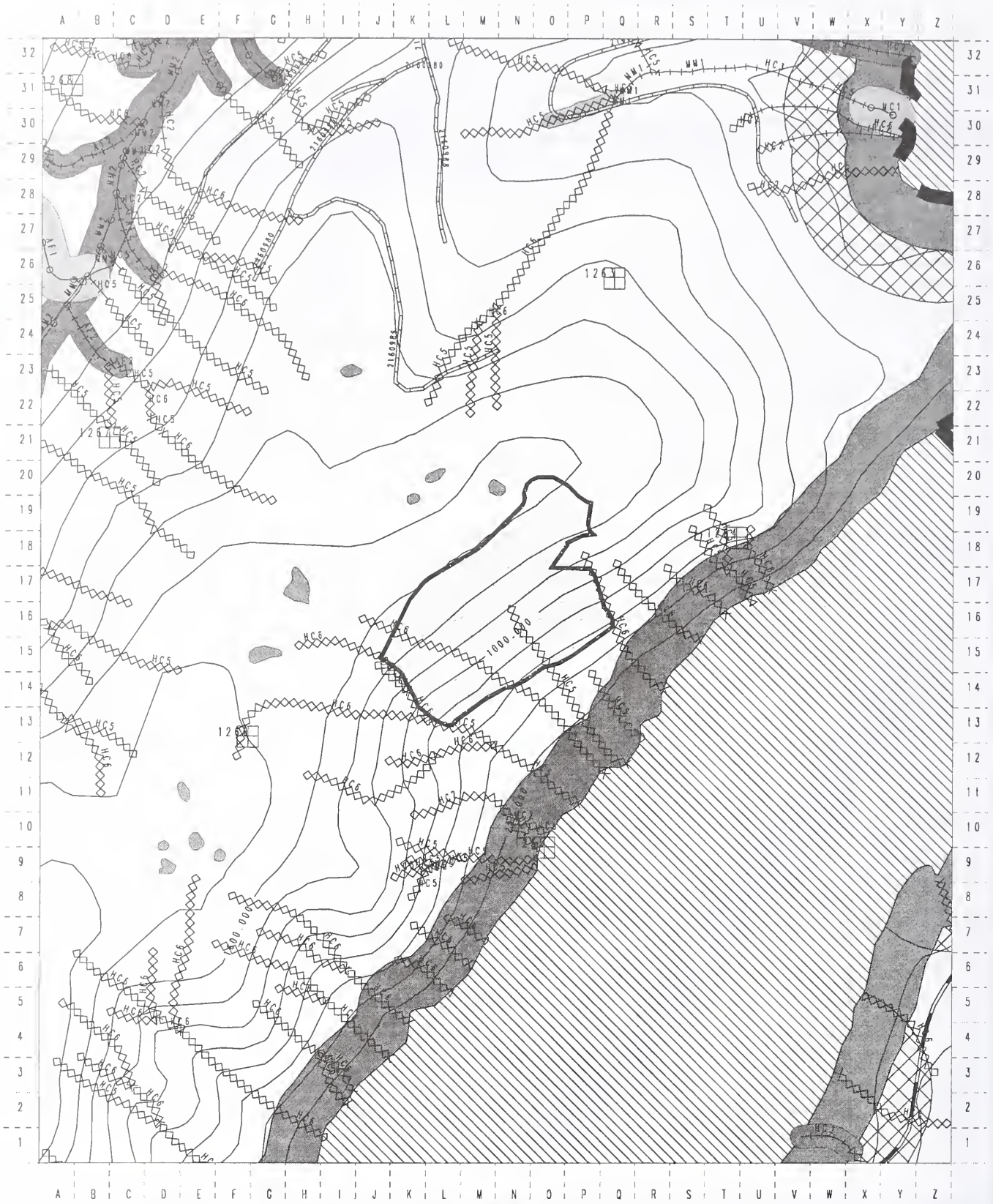
VCU-UNIT#: 678-325 ACRES: 62 VOL: 1245 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-590-63/'72(44)-772-160 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67802-126, high windthrow risk, high elev. mod. mistletoe present. Productivity of site is moderate. Helicopter log only. Suspension requirements (see soils or fish). Soils added to unit below the slope break. May need to drop portions of steep slopes. May have to leave more structure if soil protection increased. Unit changed to provide proportionality of volume classes.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 8/01/95	SOILS/WATERSHED: Unit expanded downslope to include area between this original unit and above N half former unit 678-327. Soils at bottom Traitors, Tolstoi, McGilvery, slopes 80% and greater. MMI3 on mineral soils; McGilvery, less than 41%. Overstory primarily western hemlock. This continues to about 1280' where soil changes to StNicholas, which on these slopes is MMI4. Canopy is open cedars with western hemlock, and mountain hemlock, similar to sub-alpine. Slopes break at 1400' to 55-65% but StNicholas and Helm soils characteristic of MMI4 with creeping and slumping, pistol butted cedars and hemlock, and leaning spruce. Conditions appear stable from 1460' to 1660' with Mitkof and McGilvery on 55-85% slopes. Yellow cedar comes in 1660' to 1700'. Soil lower end Helm, changes to McGilvery upper end before top backline. Finger to the N center deleted because rock face and McGilvery. Prescribed helicopter logging should provide full suspension (BMP 13.9). Added section from 500-700' to 1280' best for harvest. Section from 1280' to 1460' MMI4 potential to slide following harvest could be deleted (BMP 13.5), versus the potential from slides due to windthrow if left. Best to delete from 1280' to top for both MMI4 and McGilvery (BMP 13.5; TLMP 1991). Question if obtain adequate regeneration above 1280', may need to plant. Unit changed to only include from 1460' feet and above.
K.Kitchel, M. Solomon, 7/16/96	FISHERIES: Stream 1 is a class IV green/ white. Below the junction with stream 2 , stream 1 is a class III orange/ white. Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 4 is a class III orange/ white. Stream 5 is a class III orange/ white. Stream 9 is a class III orange/ white. Stream 10 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman 7/96	WILDLIFE: Wildlife recommends leaving live reserve trees and snags to maintain habitat structure and snag density. This unit did not rate as high priority for wildlife because due to steepness and elevation both of which are more than what is recommended in the current goshawk protocol. Therefore, wildlife did not survey in 1995 or 1996.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: Lower portions of this unit and the adjacent dropped unit 678-327, were surveyed in search of remnants of the Friendship Mine. The modern prospect was located in 678-327. Nothing was located in 678-325. No concerns with this unit. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. Harvest above 1460' only, see map. Unit added to the preferred alternative due to proportionality based on acres.

Chosino Study Area Interim Layout NOI Unit 678-325

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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eated by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

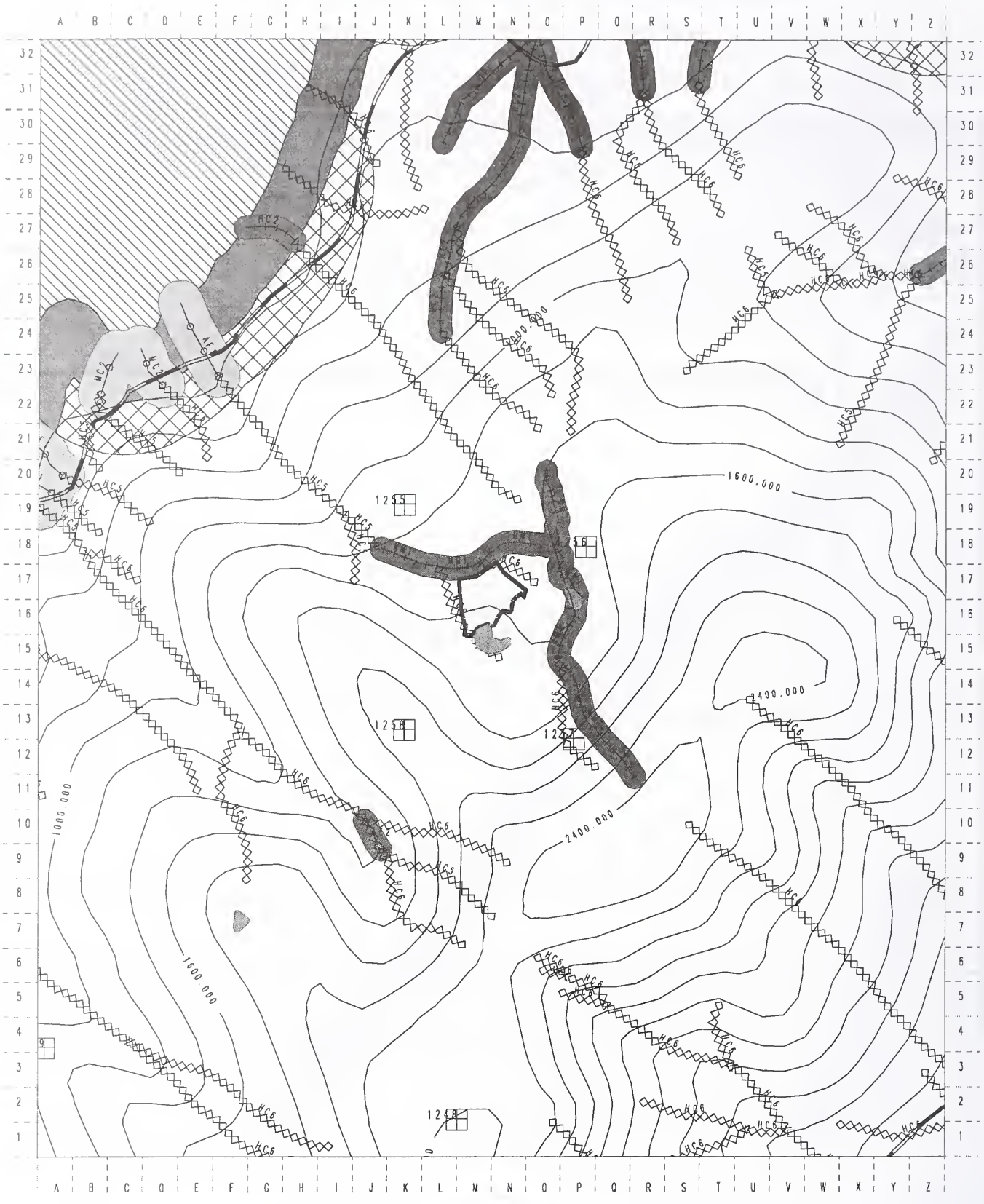
VCU-UNIT#: 678-331 ACRES: 6 VOL: 135 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-590-24 1/4 QUAD: CGRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67801-15, low windthrow risk, high elev. Productivity of site is high. Partial cut buffer. Adjacent to private clear-cutting. Defer until adjacent cuts have grown into poles with canopy closure. 95% hemlock composition. Avoid PCT due to minor financial return in hemlock.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 528E (Tolstoi - McGilvery 60-75%). Partial suspension for MM13, and McGilvery (BMP 13.9; TLMP 1991); helicopter prescribed. May need delete SW corner for unstable, disturbed, MMI 4 soils (BMP 13.5). May need protection lake SW corner and stream leaving lake (BMPs 12.6, 12.6a, 13.16).
K. Buckley 7/96	FISHERIES: Office review identified that lake needs a 100' no cut buffer (BMP 12.6).
M.Dillman 7/96	WILDLIFE: To provide for adequate snag density and distribution within the VCU, recommend leaving a 0.1 acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees where possible to maintain habitat structure. This unit did not rate as a high priority area for wildlife because its elevation is above that recommended in the current goshawk protocol. Therefore, wildlife did not survey in 1995 or 1996.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Isolated stand, defer for better/future economics.

Chasina Study Area Interim Layout NOI Unit 678-331

Mapscale 1:15840 (4 inch to Mile)


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CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

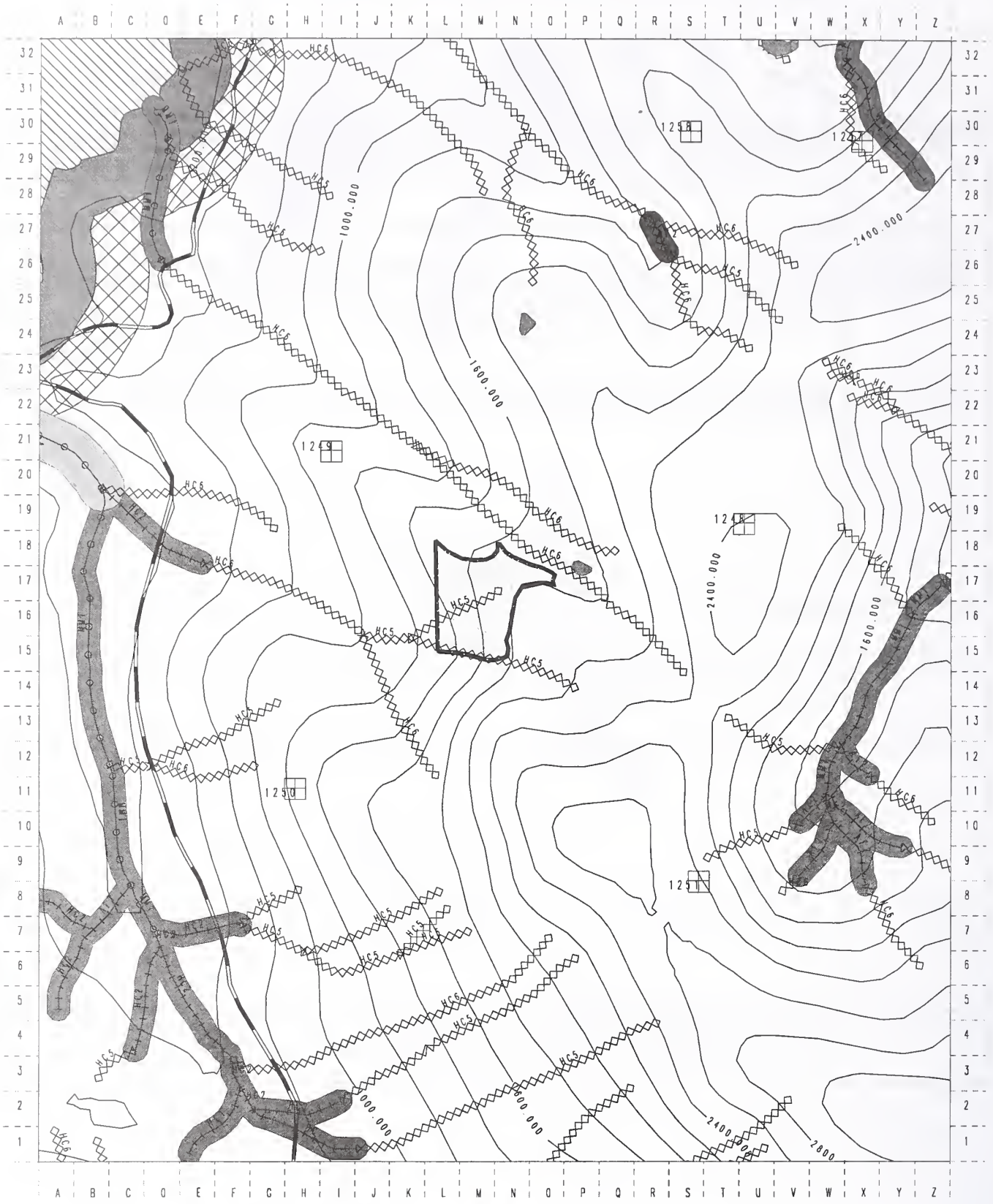
VCU-UNIT#: 678-334 ACRES: 17 VOL: 340 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-590-26 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67801-25, high windthrow risk, high elev., high mistletoe present. Productivity of site is low. Adjacent to private clear-cuts. Short trees, high defect. Lake on map is actually rock. Drop scrub at top of unit, avoid steep dropoff to north and convex slope to the west. Defer for adjacency greenup.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 528D (Tolstoi - McGilvery 35-60%), appears steeper on photos. Partial suspension for MMI3 and McGilvery (BMP 13.9; TLMP 1991); helicopter yarding prescribed. May need to bring E boundary down slope to exclude disturbed, MMI4 soils (BMP 13.5). Probably buffer S boundary stream, since it appears unstable (BMPs 13.16, 13.5). Potential to expand downslope. Most in third order watershed (BMP 12.1).
K.Buckley 8/96	FISHERIES: Office review determined possibility of streams in unit needing protection. Stream protection measures will be identified during unit layout.
M.Dillman 7/96	WILDLIFE: To provide for adequate snag density and distribution within the VCU, recommend leaving a 0.1 acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees where possible to maintain habitat structure. This unit did not rate as a high priority area for wildlife because its elevation is above that recommended in the current goshawk protocol. Therefore, wildlife did not survey in 1995 or 1996.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. Defer for better and future economics and greenup on private land. Need partial suspension for soils protection.

Chasina Study Area Interim Layout NOI Unit 678-334

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

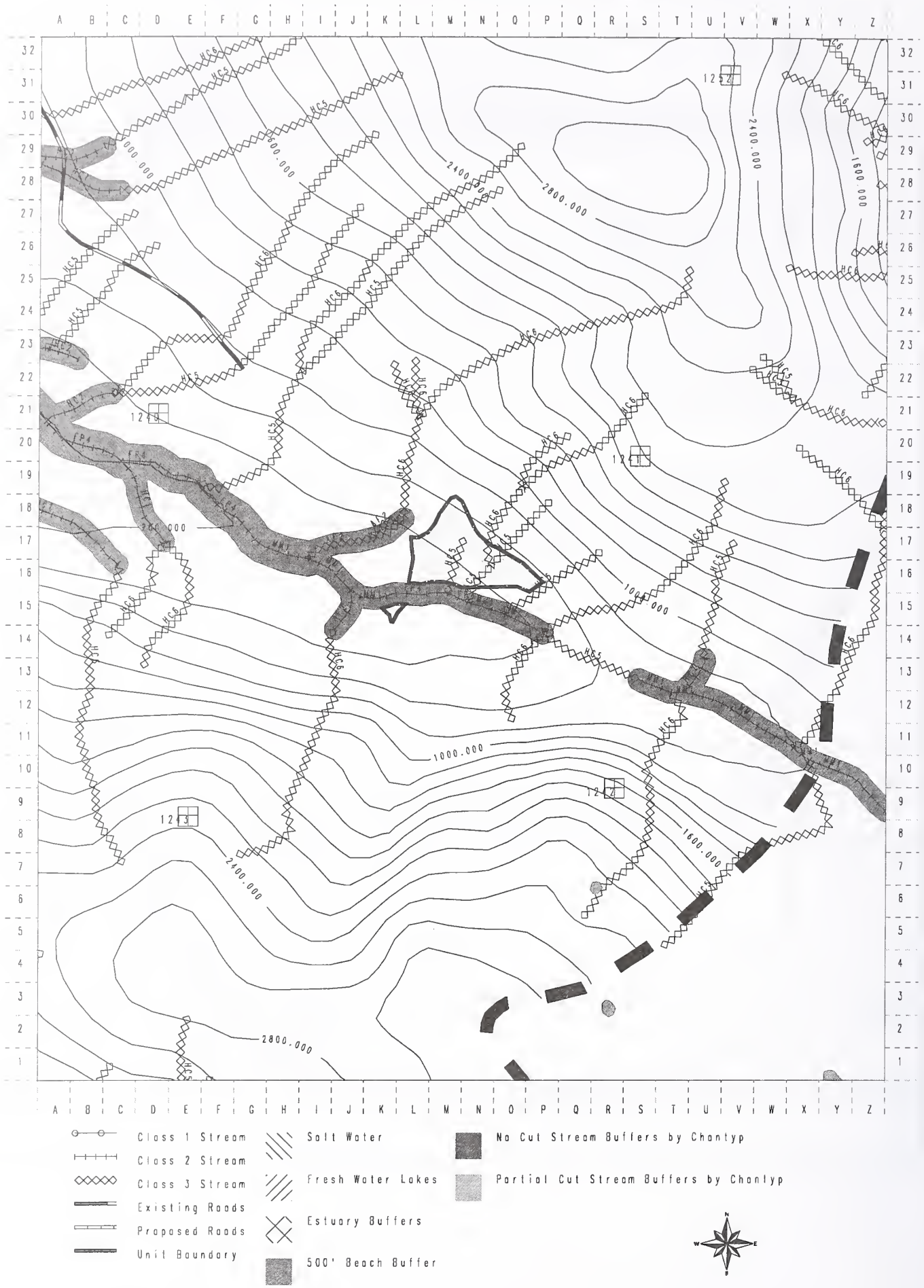
VCU-UNIT#: 678-339 ACRES: 15 VOL: 600 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-590-27 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67801-44, high windthrow risk. Productivity of site is high. Partial cut buffer. Adjacent to private clear-cuts. Very unstable area. PCT 25 years if access feasible.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 9/ 12&13/95	SOILS/WATERSHED: Soils primarily Tolstoi and McGilvery, with lithic Shakan, Kitkun, in remaining portion of unit. Slopes less than 70%, generally highest upper backline, and decreasing downslope. Partial suspension for MMI3, McGilvery, and numerous small drainages (BMPs 13.9, 13.16; TLMP 1991). Helicopter yarding prescribed. Deleted W portion S from where stream on unit card changes from N to S direction to SW direction, to avoid riparian (BMP 12.6). Deleted E portion from second stream from E shown on unit card, which point unit changes from S to SW aspect, to avoid unstable forested wetland. Lower boundary above riparian on creek on S, swings to N at middle creek shown on unit card to exclude alders and shrubs. Upper boundary extended upslope to break where slopes increase above 65-70%. Slopes above much steeper and unstable (BMP 13.5). Twelve drainages in unit includes seeps. Most drainages from slides and snow avalanches above, most dry or minimal flow, alders and salmonberry common along channels. Green and white for drainage #6 (west of slide channel #8 shown on unit card in center of unit) and #12 on new east boundary (BMP 13.16). Fish has bottom of this creek as O&W. Deleted west piece S of main creek because riparian and MMI4 on steep slopes (BMPs 12.6, 13.5). Believe E piece S of main creek acceptable as above riparian; break upper boundary slopes >70% for MMI4 and McGilvery (BMP 13.5; TLMP 1991). Third order watershed (BMP 12.1).
D.Kuntzsch, J. Frank R. Johnson 9/12-13/95	FISHERIES: Stream 1 is a Class III orange/ white. Stream 2 is a class II orange/ white AHMU that requires a 120' buffer (BMP 12.6). Stream 3 and 4 are side channels of stream 2 and require a 120' AHMU buffers (BMP 12.6). Stream 5 (stream 8 in soils report) is a class III green/ white. Stream 6 (stream 12 in soils report) is a class III orange/ white at the bottom of the unit, and changes to class III green/ white near the top of the unit. Refer to soils report for an additional green/ white stream that is west of stream 5. The orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP13.16).
M.Dillman 7/96	WILDLIFE: Wildlife recommends leaving live reserve trees and snags to maintain habitat structure and snag density. This unit exceeds the steepness and elevation criteria recommended by the current goshawk protocol so it was no surveyed by wildlife during 1995 or 1996.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut.

Chastina Study Area Interim Layout NOI Unit 678-339

Mapscale 1:15840 (4 inch to Mile)



eated by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

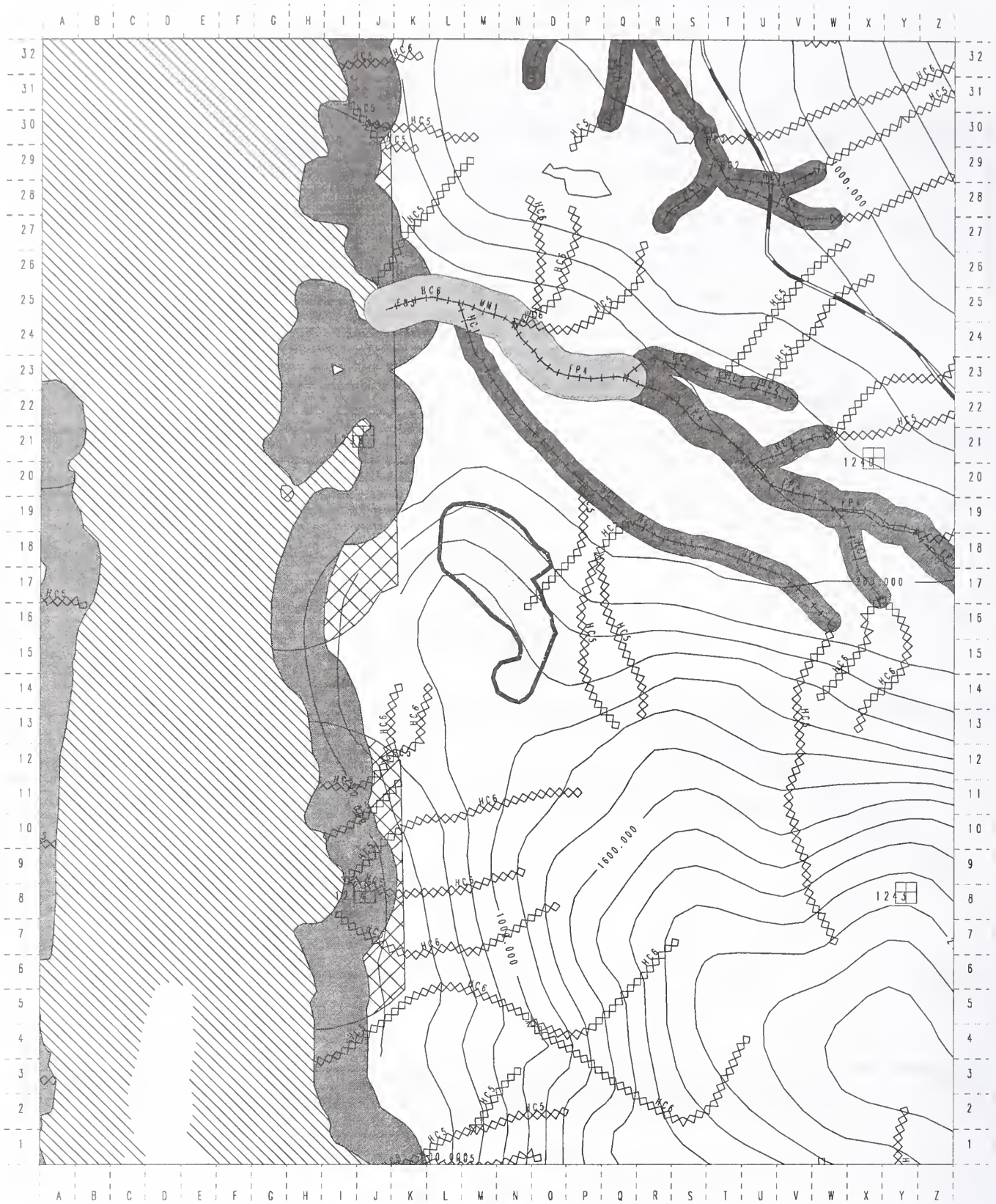
VCU-UNIT#: 678-343 ACRES: 25 VOL: 250 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-590-58 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windthrow risk. Multistoried. Productivity of site is low. Avoid steep areas to the north and west (see soils). Moderately high elevation. Plant YC for maintenance of YC composition.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 9/15/95	SOILS/WATERSHED: West, upper boundary is top of side slope where breaks to flattish top at about 850'. Top relatively flat but muskeg and low volume forest wetland (Kaikli, Kina) not part of unit (BMP 12.5). Sideslope in unit, continues down to second growth. Soils Tolstoi, Traitors, with McGilvery. Slopes 50-90%. Partial suspension due to MMI3 and McGilvery (BMP 13.9; TLMP 1991). Helicopter prescribed. Areas steeper slopes (about 90%) from midslope to near bottom unit. Concerns because trees were pedestaled, pistol butted, leaning and blowdown was observed; believe trees are unstable due to wind rather than soil types. Believe possible expand unit to N and E on sideslope. S end unit changes to forest wetland (StNicholas). Has numerous small V-notches (approx. 10' deep) from top of unit, which combine into main V's. All V-notches orange and white class III because unstable side slopes, even though some dry (BMP 13.16). Not believe able provide O&W protection due closeness of streams. SW boundary junction N-S ridge on W, and rock face to S, and all lands N aspect down slope from rock face. Exclude all lands in N facing bowl between two units due to unstable MMI 4, colluvial McGilvery, numerous drainages, landslides, and disturbed ground (BMP 13.5, 13.16; TLMP 1991). Third order watershed (BMP 12.1).
K. McCartney, M. Solomon, 6/13/96	FISHERIES: Stream 1 is a class IV green/ white. Stream 2 is a class III orange/ white. Stream 3 is a class IV green/ white. Stream 4 is a class IV green/ white. Stream 5 is a class III orange/ white that turns into a class IV green/ white at 1120' of elevation. Karst is present in the unit. The orange/ white streams require directional falling, and split yarding or full suspension, and cleaning of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial over. Clean streams of introduced debris before the end of the season or before the yarder leaves the area (BMP 13.16).
M.Dillman 7/96	WILDLIFE: Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit exceeds the steepness recommended by the current goshawk protocol so was not surveyed by wildlife during 1995 or 1996.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. Unit dropped from the preferred alternative due to proportionality based on acres.

Chasina Study Area Interim Layout NOI Unit 678-343

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

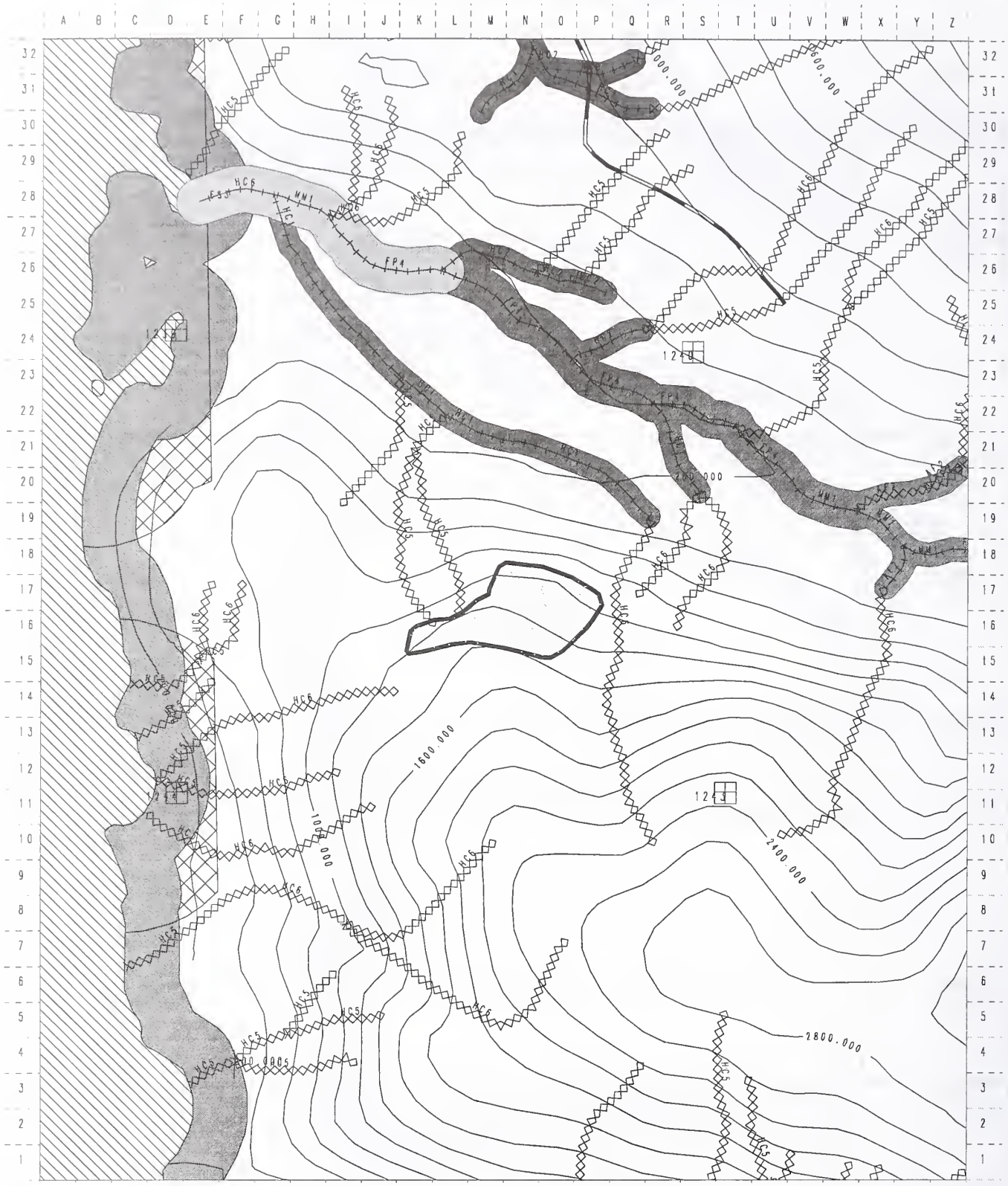
VCU-UNIT#: 678-344 ACRES: 21 VOL: 525 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-590-58 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windthrow risk, high elev. Productivity of site is moderate. Soils changed original shape to avoid unstable steep slopes to south and expanded unit to west and north. Helicopter yarding distance 3/4 mile.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 9/15/95	SOILS/WATERSHED: W boundary slope break above rock faces that above landslide east side of N facing bowl between units. N boundary continues above rock wall which above second growth. E boundary at slope break where drops E to drainage flowing S. Slope break buffer on this class III due unstable MMI4 (BMPs 13.5, 13.16). E boundary S to rock knob 1160', which SE corner. Keep below knob and then diagonal to ridge about 1400', cross ridge heading W, then S to approx. 900' above slide which NW corner where started. Soils Tolstoi, StNicholas, McGilvery, Kitkun, Traitors, with Tokeen, shallow Shakan. Slopes 45-110%. Steeper slopes (>75%) associated with rock faces primarily NW portion unit. Full suspension prescribed by helicopter yarding should protect MMI3, inclusions MMI4, forested wetlands, McGilvery mixed throughout unit (BMPs 12.5, 13.9; TLMP 1991). Still, marginal unit due amount McGilvery, rock faces, inclusions MMI4, and unstable. Maybe two O&W class III small V's, which continuation creeks on unit card (BMP 13.16). Several lesser drainages G&W class IV small V's, and non-flag drainages (BMP 13.16). Third order watershed (BMP 12.1).
K. Kitchel, K. Buckley, S. Deck, 6/13/96	FISHERIES: Stream 2 is a class III orange/ white that changes to a class IV green/ white at 1280' of elevation. Stream 3 is a class IV green/ white. Stream 4 is a class III orange/ white; at 1220' of elevation stream 4 becomes a class IV green/ white. This unit is very steep. The class III orange/ white streams require directional falling, split yarding or full suspension, and immediate removal of introduced debris (BMP 13.16). The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris before the end of the season or before the yarder leaves the area (BMP 13.16).
M.Dillman 7/96	WILDLIFE: Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit exceeds the steepness recommended by the current goshawk protocol so was not surveyed by wildlife during 1995 or 1996.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. G&W streams requires DF, SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. O&W streams require DF, full over or SY, and immediate cleaning of introduced debris. Unit dropped from preferred alternative due to proportionality based on acres.

Chasina Study Area Interim Layout NOI Unit 678-344

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

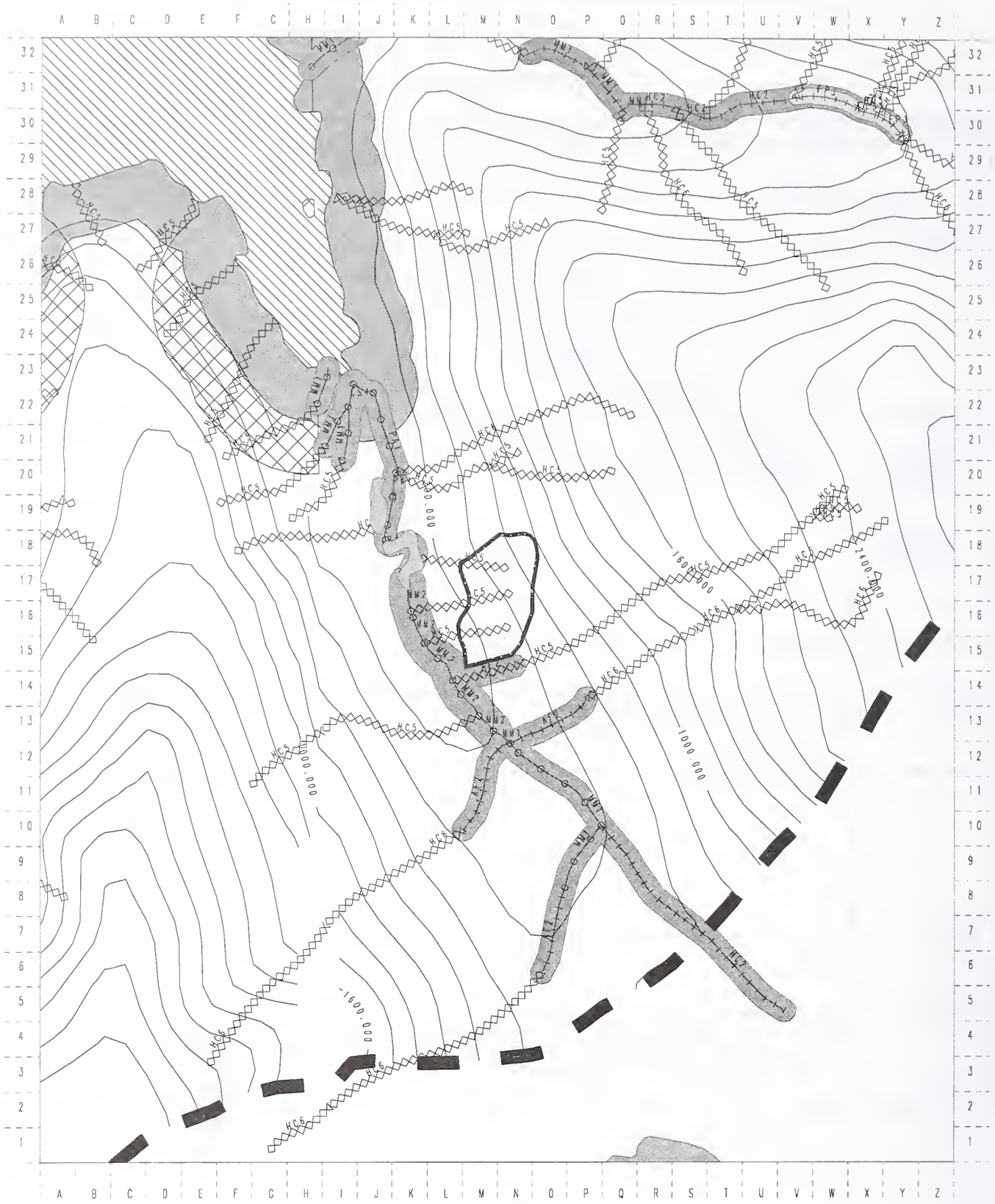
VCU-UNIT#: 678-348 ACRES: 16 VOL: 640 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-590-54 1/4 QUAD: CRG A-1 SW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67801-93, high windthrow risk, mistletoe present. Productivity of site is high. Buffers (see fisheries). Dropped bottom of unit near stream buffer. Unit was shifted to the north. Suspension requirements (see soils or fish). Helicopter yarding distance 1/2 mile. Within designated old growth reserve.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 10/18/95	SOILS/WATERSHED: Soils McGilvery and Tolstoi, with StNicholas, Remedios, Kitkun; riparian Traitors above main creek, which to W in bottom. Slopes generally 60-85%, although lower bottom SW corner riparian about 240' and riparian about 200' NW corner; much steeper above 900'. Recommend delete, primarily McGilvery on colluvial rock and on rock faces, and riparian bottom of unit (BMPs 12.6, 12.6a; TLMP 1991). Much blowdown with salmonberry and alder, may limit tree regeneration. May need to plant seedlings if harvest, but McGilvery could prevent establishment. Looked to add to N, believe not feasible due rock outcrops and colluvial rock with McGilvery, blowdown with disturbance species. Probably slope break buffer or diameter limit cut, upper portion S boundary class III creek due to depth (100'), slope (70%), and soils (McGilvery and Remedios) (BMP 13.16). Other streams as fisheries prescribe, although note upper portion unit more subsurface flows able hear but not see, ephemeral drainages SW portion, and doubt 50' buffer middle stream due potential blowdown (diameter limit cut is an option).
D.Kuntzsch, B. Johnston, K. Buckley 8/14/95	FISHERIES: Stream 1 is a class I blue/ white TTRA that will require a 120' buffer (BMP 12.6). Stream 2 is a class III orange/ white. Stream 3 is a class III orange/ white that requires a 50' buffer (BMP 13.16). Stream 4 is a class III orange/ white. Stream 5 is a class III orange/ white. The orange and white streams require directional falling, split yarding or full suspension, and immediate removal of introduced debris from the stream channel (BMP 13.16).
B.Johnston 8/14/95	WILDLIFE: Bear sign in unit (salmonberry thickets throughout unit). This unit is within a designated old growth reserve so was not surveyed during 1996. If current policy changes and this unit is harvested, wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is to be harvested, wildlife will need to conduct surveys in the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. Recommended delete for final. Unit dropped from the preferred alternative due to proportionality based on acres.

Chasina Study Area Interim Layout NOI Unit 678-348

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portiol Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Merfeld on November 04, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 678-375 ACRES: 36 VOL: 1440 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-390-103 1/4 QUAD: CRG A-2 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windthrow risk, high elev. Productivity of site is high. Within designated old growth reserve. Partial cut buffer. Avoid oversteepen slopes.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 528D (Tolstoi - McGilvery 35-60%). Partial suspension for McGilvery (TLMP 1991). Helicopter logging prescribed (BMP 13.9). W boundary at steeper lands which MMI4 and McGilvery. V-notches located in N, E center, and E parts of the unit may require slope break buffers, diameter limit cuts, or be unit boundaries on slope breaks as applicable (BMP 13.16). Cliff should be S boundary.
D.Kuntzsch, 7/96	FISHERIES: Protect water quality streams in unit per soils instructions. GIS has a class II AHMU stream as the east unit boundary. This stream will need to be field verified by a fisheries biologist during layout, but should be given a 100' no-cut buffer for planning purposes.
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve. Wildlife did not survey in 1995 or 1996. If current policy is changed and this unit is harvested wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested wildlife will need to conduct surveys in the area prior to harvest. Unit is within 1/2 mile of a known eagle nest. If the unit is harvested all road construction must be accomplished in accordance with the requirements of the Bald Eagle Protection Act, and must also comply with the MOU between the Forest Service and the U.S. Fish and Wildlife Service. Written coordination with the USF&WS must be documented. If unit is helicoptered location of eagle nest may effect fly/drop zones.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. Unit dropped from the preferred alternative due to proportionality based on acres.

Chasina Study Area Interim Layout NOI Unit 678-375

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 678-379 ACRES: 16 VOL: 640 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-390-104 1/4 QUAD: CRG A-2 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windthrow risk. Productivity of site is high. Within designated old growth reserve. Use streams for unit boundaries. Avoid oversteepen slopes.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 528D (Tolstoi - McGilvery 35-60%), 528E (Tolstoi - McGilvery 60-75%), 1F (Vixen 75-100%), 1D (Vixen 35-60%). Most MMI3 and McGilvery, require partial suspension (BMP 13.9; TLMP 1991). Helicopter yarding prescribed. May be more steep than mapped based on review of photos. V-notches in E half of the N and S boundaries may require slope break buffers (BMP 13.16). Lake to W may require buffer (BMPs 12.6, 12.6a).
K. Buckley 7/96	FISHERIES: GIS identifies two class III streams. Possibly additional streams present in unit. Stream protection measures will be identified during unit layout.
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve. Wildlife did not survey in 1995 or 1996. If current policy changes and this unit is harvested wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested, wildlife will need to conduct surveys in the area prior to harvest. Unit is within a 1/2 mile of a known eagle nest. Road construction must be accomplished in accordance with the requirements of the Bald Eagle Protection Act, and must comply with the MOU between the Forest Service and the U.S. Fish and Wildlide Service. Written coordination with the U.S. F.&W.S. must be documented. If the unit is helicoptered the location of the eagle nest may effect fly/drop zones.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. Unit dropped from the preferred alternative due to proportionality based on acres.

Chasina Study Area Interim Layout NOI Unit 678-379

Mapscale 1:15840 (4 inch to Mile)



CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

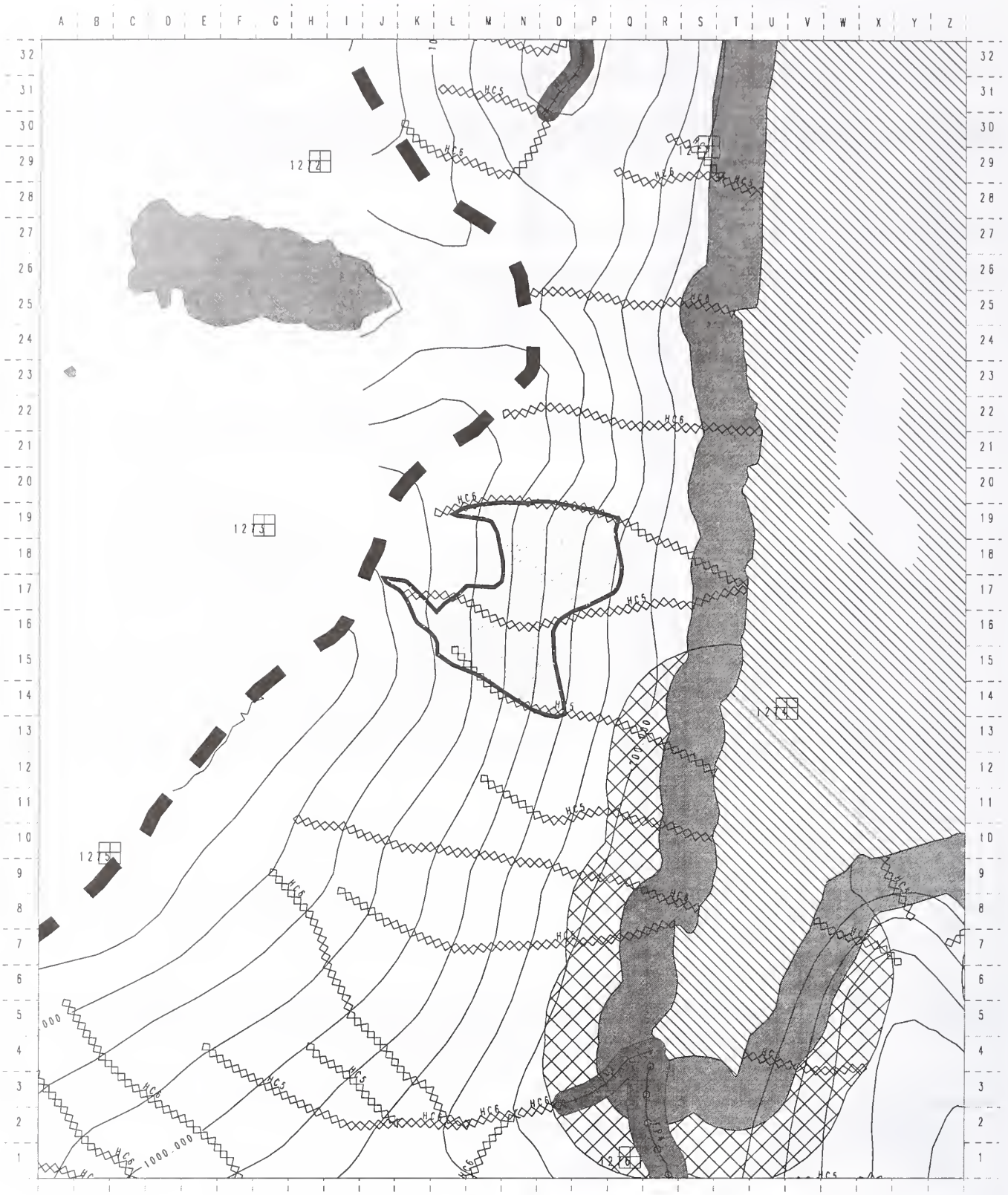
VCU-UNIT#: 678-381 ACRES: 48 VOL: 1920 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-390-105 1/4 QUAD: CRG A-2 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk. Productivity of site is high. Within designated old growth reserve. Use streams as unit boundries. Avoid oversteepen slopes.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 8/01/95	SOILS/WATERSHED: Soils mapped 528D (Tolstoi - McGilvery 35-60%), with 1F (Vixen 75-100%), 33D (StNicholas - McGilvery 35-60%). Partial suspension for MMI3, McGilvery, forested wetlands (BMPs 12.5, 13.9; TLMP 1991). Helicopter prescribed. May be steeper than mapped based review photos. W boundary very steep, MMI4, and McGilvery present. Probable O&W protection or slope break buffers streams N and S boundaries, and center of unit (BMP 13.16). Could be diameter limit cut in V-notch below slope break center of unit.
D.Kuntzsch, 7/96	FISHERIES: Protect water quality streams in unit per soils instructions. No other fisheries concern known at this time.
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve. Wildlife did not survey this unit in either 1995 or 1996. If current policy is changed and this unit is harvested wildlife recommends leaving live reserve trees and snags where possible to maintian habitat structure and snag density. Also, if this unit is harvested, wildlife will need to conduct surveys in the area prior to harvest. Unit is within 1/2 mile of a known eagle nest. Road construction must be accomplished in accordance with the requirements of the Bald Eagle Protection Act and must also comply with the MOU between the Forest Service and the US Fish and Wildlife Service. Written coordination with the USF&WS must be documented. If this unit is helicoptered the location of the nest may effect fly/drop zones.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. Unit dropped from the preferred alternative due to proportionality based on acres.

Chasina Study Area Interim Layout NOI Unit 678-381

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Warfield on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

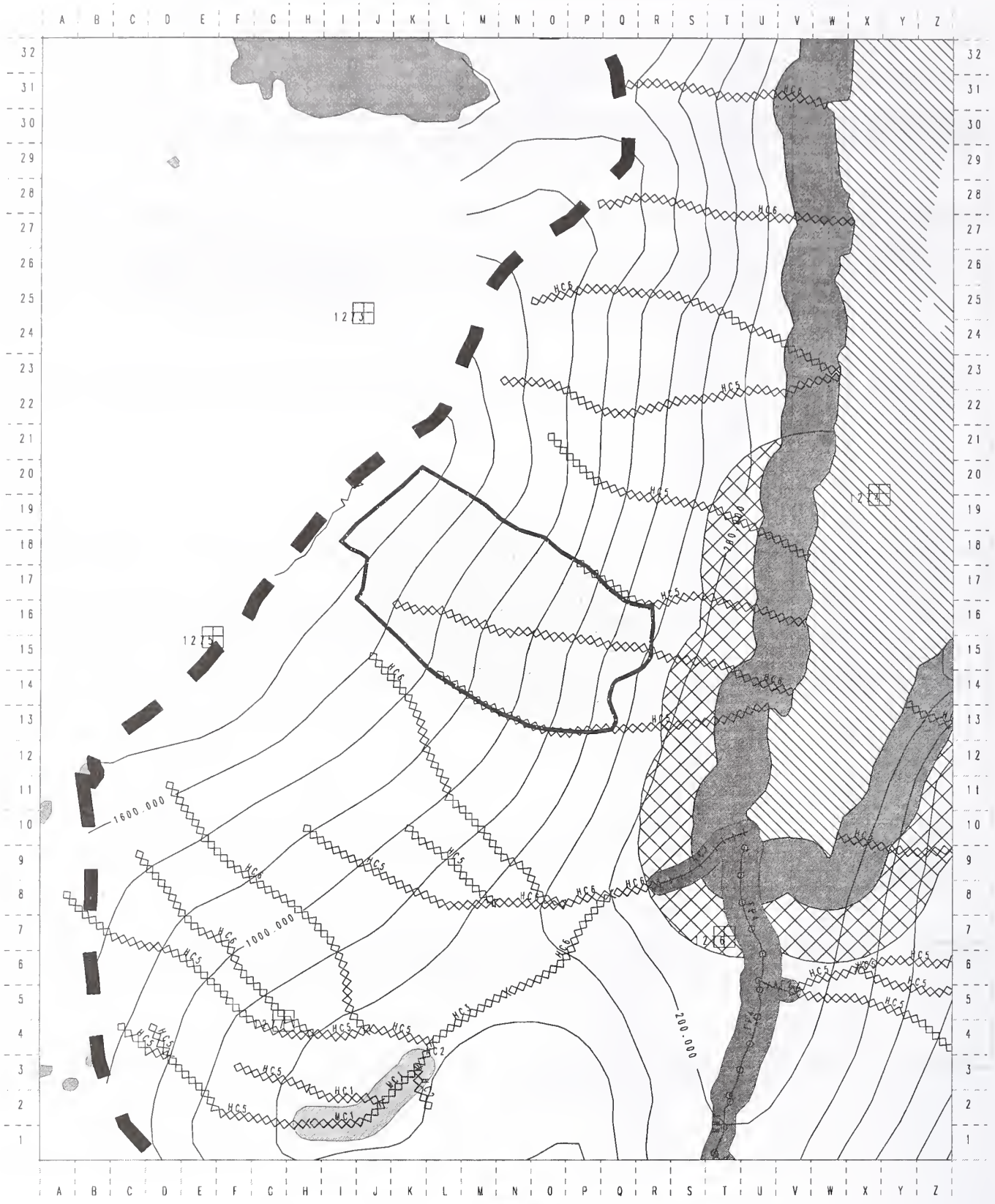
VCU-UNIT#: 678-383 ACRES: 96 VOL: 2400 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-390-106 1/4 QUAD: CRG A-2 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk, high elev. Productivity of site is moderate. Within designated old growth reserve. Use streams as unit boundaries. Avoid oversteepen soils.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 351D (Karta - Tolstoi 35-60%), with 34D (StNicholas - Shakan 35-60%), 33D (StNicholas - McGilvery 35-60%). Partial suspension for MM13, forested wetland, McGilvery, (BMPs 12.5, 13.9; TLMP 1991). Prescribed helicopter yarding. May be steeper than mapped, based on photos. Probable slope break buffer V-notch N boundary, and O&W protection streams center and S boundary (BMP 13.16).
D.Kuntzsch, 7/96	FISHERIES: Protect streams in unit per soils instructions. No other fisheries concerns identified during office review.
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve. Wildlife did not survey this unit in either 1995 or 1996. If current policy is changed and this unit is harvested wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested, wildlife will need to conduct surveys in the area prior to harvest. Maintain 1000 foot estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. O&W streams require DF, full over or SY, and cleaning of introduced debris immediately.

Chasina Study Area Interim Layout NOI Unit 678-383

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

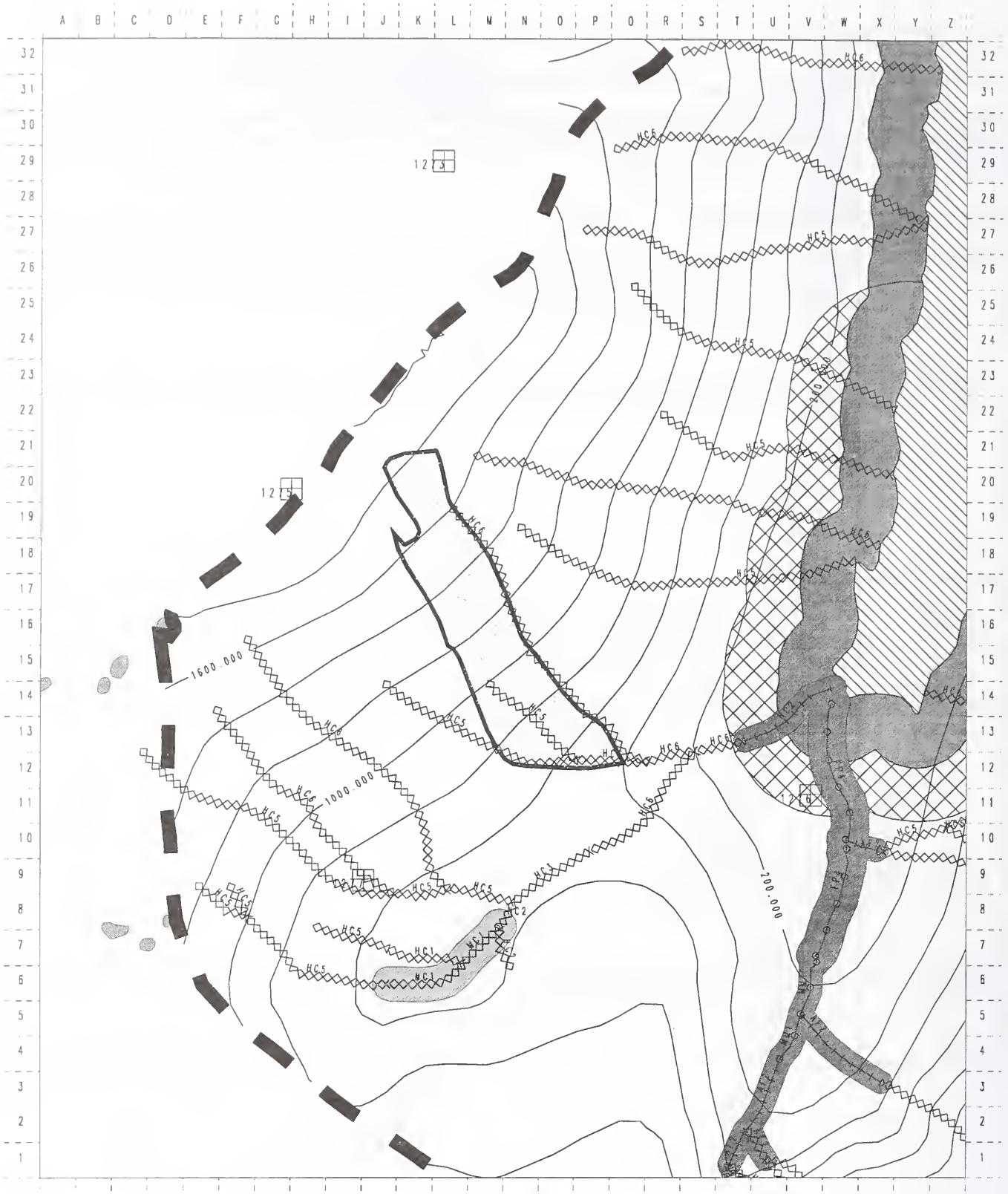
VCU-UNIT#: 678-385 ACRES: 50 VOL: 1250 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-390-106 1/4 QUAD: CRG A-2 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk, high elev. Productivity of site is moderate. Within designated old growth reserve. Use streams as unit boundaries.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 351D (Karta - Tolstoi 35-60%), with 35D (StNicholas - Tolstoi 35-60%), 35E (StNicholas - Tolstoi 60-75%). Partial suspension for MM13 and forested wetland (BMPs 12.5, 13.9). May be steeper than mapped based on photos. Helicopter yarding prescribed. Probable slope break buffer V-notch S boundary, and O&W protection streams center and N boundary (BMP 13.16). S half in third order watershed (BMP 12.1).
D.Kuntzsch, 7/96	FISHERIES: Protect streams in unit per soils instructions. No fisheries concerns were identified during an office review.
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve. Wildlife did not survey this unit in 1995 or 1996. If current policy is changed and this unit is harvested wildlife recommends leaving live reserve trees and snags where possible to maintain habitat stucture and snag density. Also, if this unit is harvested wildlife will need to conduct surveys in the area prior to harvest. Maintain 1000 foot estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. O&W streams require DF, full over or SY, and cleaning of introduced debris immediately.

Chasina Study Area Interim Layout NOI Unit 678-385

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Warfield on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

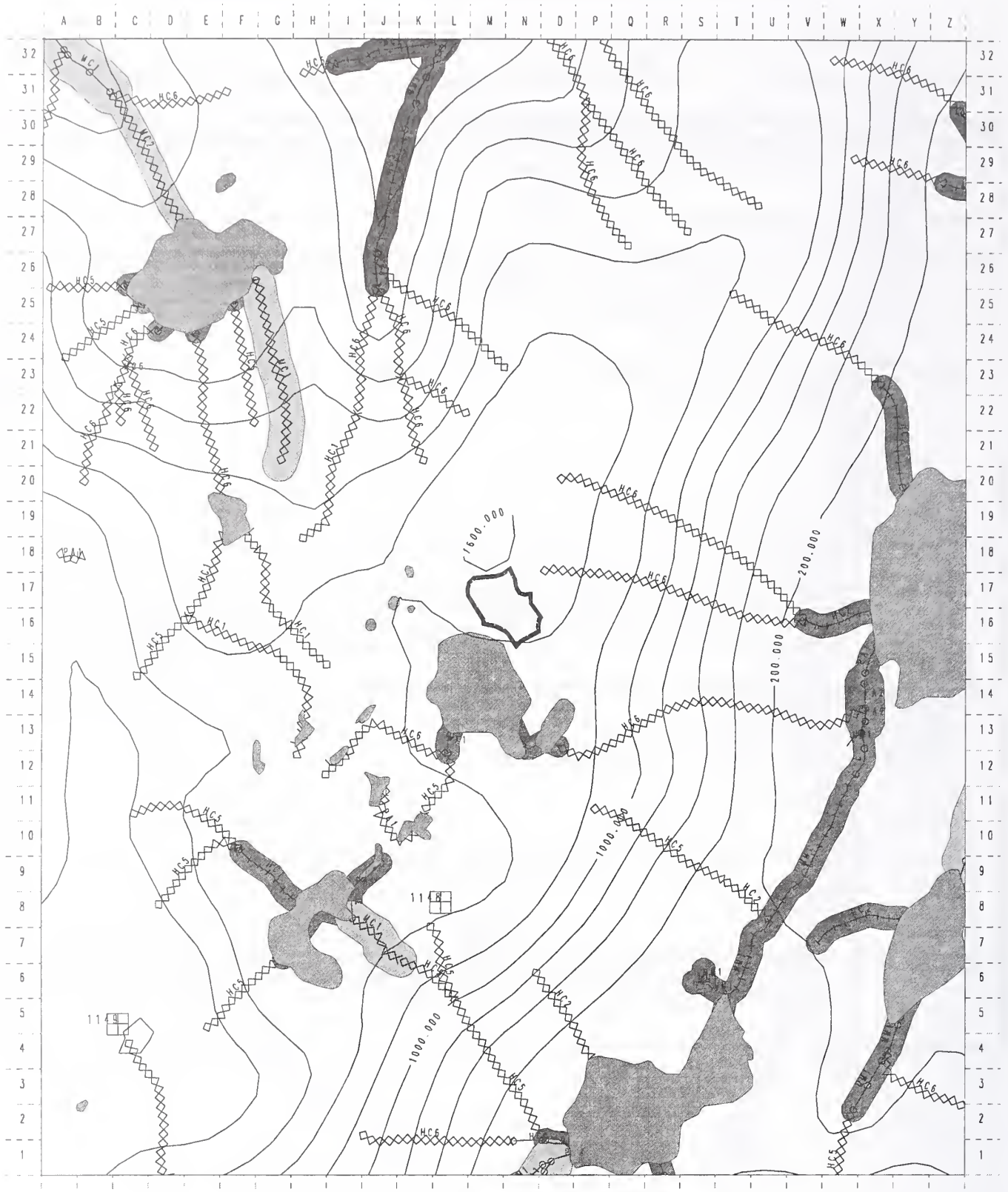
VCU-UNIT#: 679-303 ACRES: 6 VOL: 81 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-490-84 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-50, high windthrow risk, high elev. Productivity of site is low. Uneconomic, low volume area surrounding. Unit is within an old growth reserve.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr. 9/22/95 EIS R.Johnson	SOILS/WATERSHED: Soils Traitor with McGilvery. Slopes 60 to 90%. Approximately 2 acres high MMI soils. Partial suspension is required throughout the unit. Helicopter yarding prescribed should provide full suspension (BMP 13.9). The lake should receive a 100 foot buffer (BMPs 12.6, 12.6a). A small stream on the north unit boundary should receive G&W protection, do not use this stream as a yarding corridor (BMP 13.16).
D.Kuntzsch, 7/96	FISHERIES: The lake on the south side of the unit needs a 100' no cut buffer. Follow soils instructions for stream protection within and adjacent to the unit.
C.Tighe 8/96	WILDLIFE: Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit did not rate as a high priority area for wildlife because its elevation is above that recommended in the current goshawk protocol. Therefore, wildlife did not survey in either 1995 or 1996. This unit is also within an old growth reserve which is another reason it was not surveyed by wildlife. If current policy changes and this unit is to be harvested wildlife will need to survey the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Seed tree w/ reserves: Leave 3 TPA of YC of phenotypically superior trees for seed sources to maintain diverse stand composition. G&W stream: DF, SY (where practical) or partial over. Clean the stream of introduced debris before the end of the operating period or before the yarder leaves the area.

Chosino Study Area Interim Layout NOI Unit 679-303

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

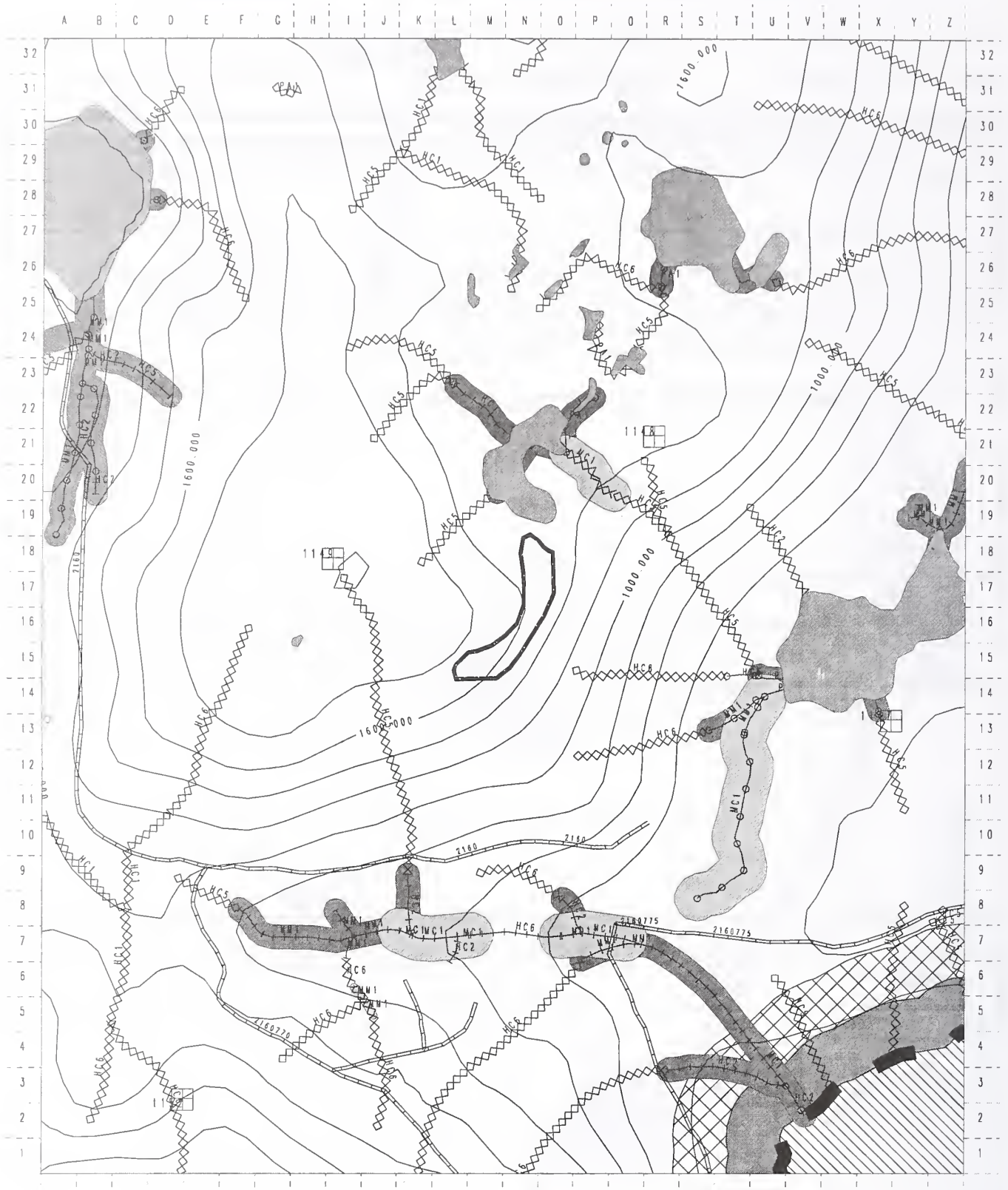
VCU-UNIT#: 679-305 ACRES: 9 VOL: 135 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-45 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-56, high windthrow risk, high elev. Productivity of site is low. Uneconomic, low volume area surrounding. Isolated stand, defer for better / future economics. Within designated old growth reserve.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr. 9/22/95 EIS R.Johnson	SOILS/WATERSHED: Soils Shakan, Tolstoi, McGilvery. Slopes 30-140%. Deleted north half MMI 4, brushfields, and cliffs (BMP 13.5); southeast corner cliffs, MMI 4; west side low volume on very steep slopes. Remaining unit: Moderate MM1 soils with a few areas of McGilvery soils. Partial suspension is required. Full suspension should be provided via prescribed helicopter yarding (BMP I3.9). A small stream is present in the brushfield on the north side of the unit, designate G&W, DF, and clean the stream of any introduced debris before the end of the operating season (BMP 13.16).
D.Kuntzsch, 7/96	FISHERIES: Lake on the north side of the unit requires a 100' no cut buffer. Protect streams in and near the unit per soils instructions.
C.Tighe 8/96	WILDLIFE: This unit is within a designated old growth reserve so was not surveyed in 1995 or 1996. If current policy changes and this unit is harvested, wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested wildlife will need to conduct surveys in the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. G&W streams requires DF, SY or partial over, and cleaning the stream of introduced debris before the end of the operating period.

Chasina Study Area Interim Layout NOI Unit 679-305

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

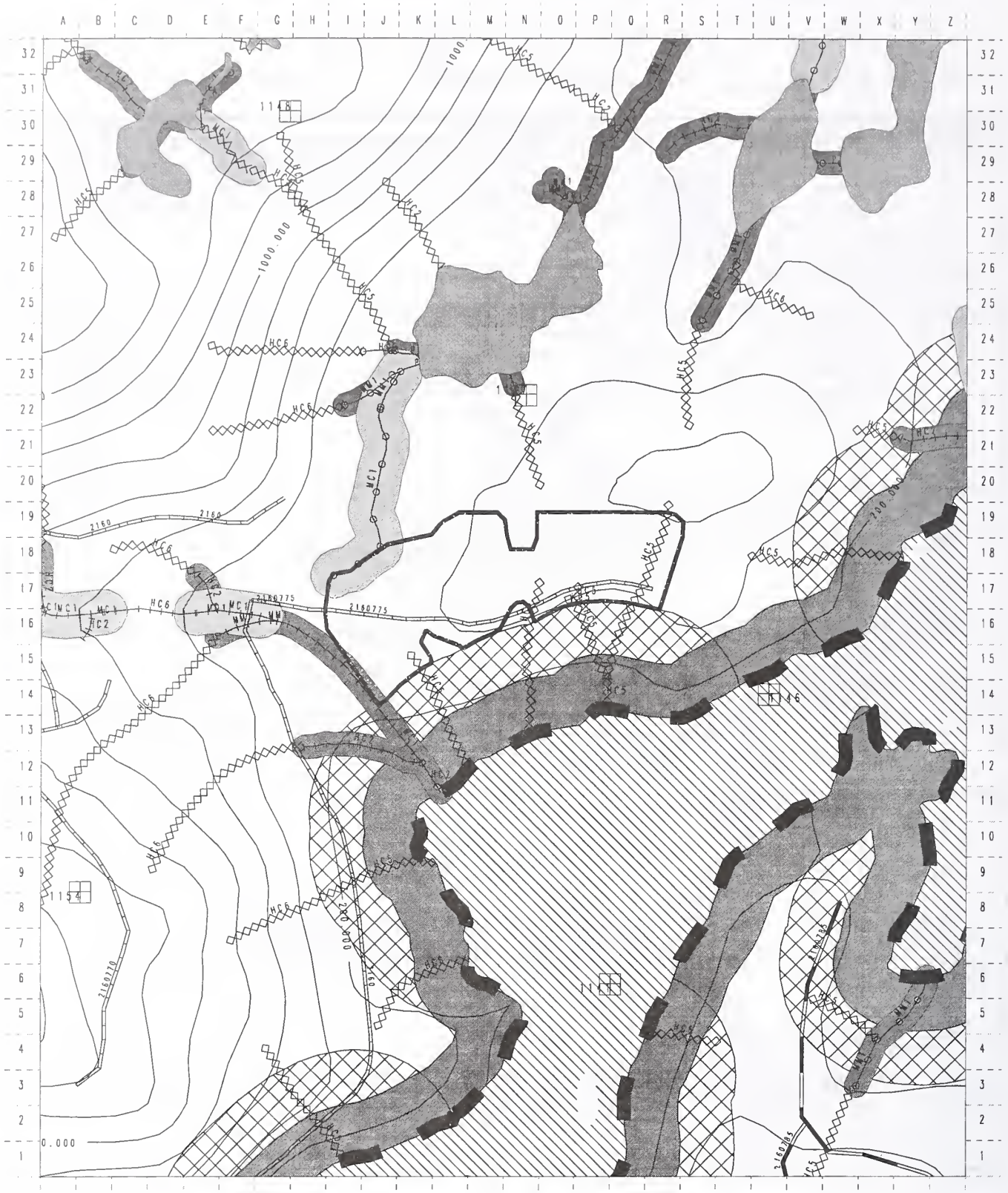
VCU-UNIT#: 679-318 ACRES: 72 VOL: 1381 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-85 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G. Lawton 6/96	SILVICULTURE/TIMBER: 67901-65, low windthrow risk, portion downhill yarded, high elevation. Productivity of site is moderate. Adjacent to state selection. Buffers (see fisheries). Split-yarding required on stream. Retain Pacific yew where feasible. Anticipate unit to shift east, across creek (split on). Option: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Within designated old growth reserve.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 10/12/95	SOILS/WATERSHED: Soils primarily forested wetland with Kaikli predominant top unit, StNicholas lower portion. Inclusions McGilvery and Kitkun small knobs center unit. Tolstoi bottom unit, and probably W facing side slopes added to E. Slopes generally less than 65%. Partial suspension for wetlands, MMI3 and McGilvery (BMPs I2.5, 13.9; TLMP 1991). N end deleted for State selection. Additions to E and W sides unit. Protect muskeg included in W end unit (BMP 12.5). Protection streams and associated small V-notches as designated by fisheries (BMP I3.16). Defer harvest on Kailkli (TLMP 1996). All of Kitkun Bay requires a 1000' estuary buffer because it is confined by a salt chuck (TLMP 1996). Delete the bottom of the unit (TLMP, 1991 estuary class 1).
D. Kuntzsch, K. Buckley, 10/11/95	FISHERIES: Stream 1 is a class III green/ white. Stream 2 is a class III green/ white. Stream 3 is a class III green/ white. Stream 4 is a class III green/ white. The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16). The lower one-third of the unit may be dropped due to estuary definition.
M.Dillman, B.Johnston 9/6/95 M.Dillman 10/96	WILDLIFE: Bear and deer sign in unit: trails, pellets and scat. Otter signs in beach buffer. Loon and geese heard at lake. The unit boundary may change depending on the final definition of an estuary buffer. The way the unit is currently mapped in GIS indicates that the southern 1/3 of the unit is in an estuary buffer and will need to be dropped. This unit is within a desiginated old growth reserve and was was not surveyed in 1996. If current policy changes and this unit is harvested, wildlife recommends leaving live reserve trees and snags where possible to maintain the habitat structure and snag density. Also, if this unit is harvested wildlife would need to conduct surveys in the area prior to harvest.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: This low sensitivity unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit. VISUALS:
G. Lawton 6/96	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Diameter limit - system, leave all species less than 16" DBH. Partial suspension required. Protect muskeg in west end of unit.

Chasina Study Area Interim Layout NOI Unit 679-318

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

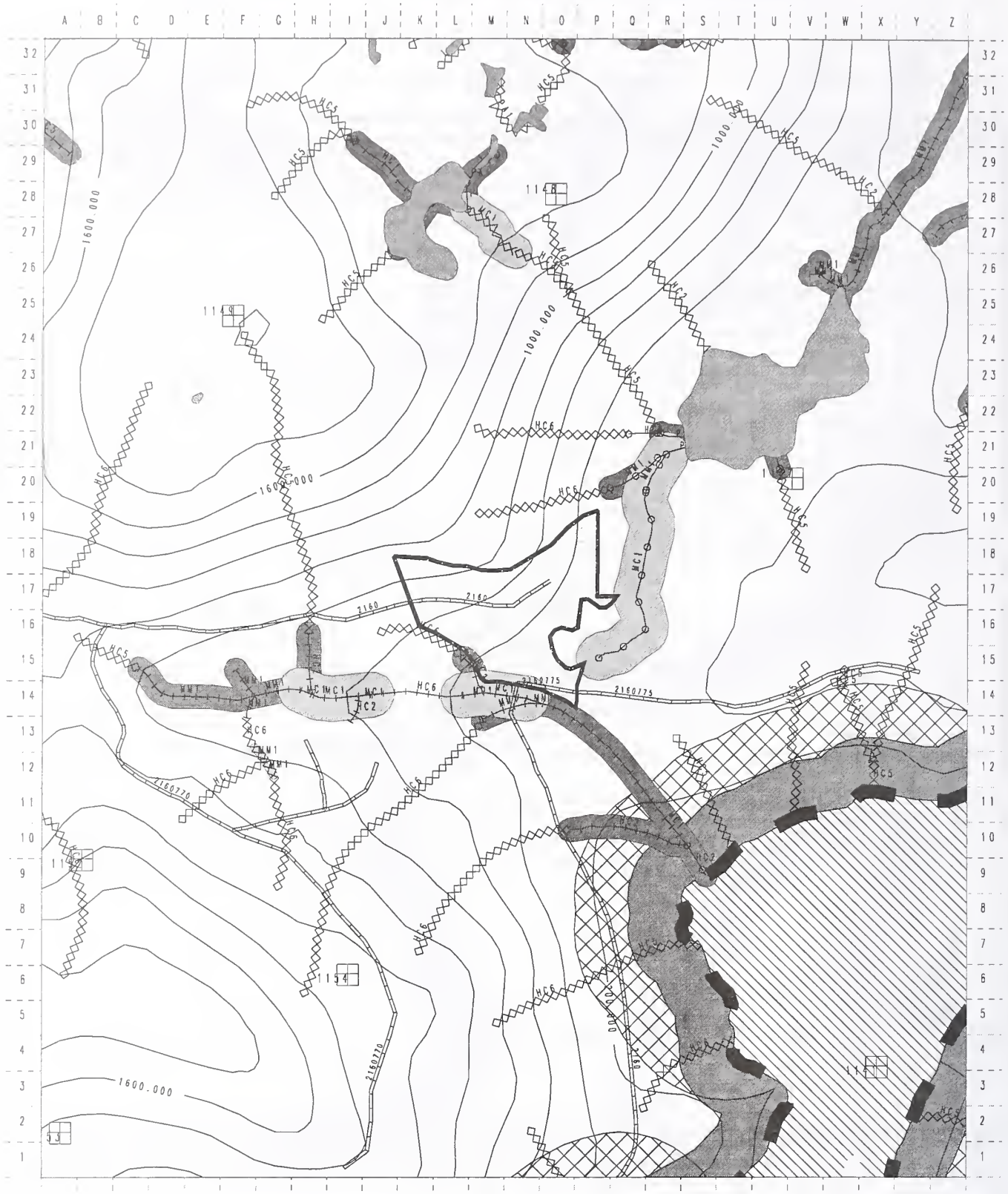
VCU-UNIT#: 679-320 ACRES: 40 VOL: 1160 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-85 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-64, high windthrow risk, portion downhill yarded. Productivity of site is moderate. Partial cut buffer. Adjacent to state selection. Unit design calls for running skyline regeneration method. Verify roads and/or landing locations. Difficult terrain - potential blind leads throughout unit. Verify feasibility and modify unit bdry as required. Profiles needed. Reach up where possible and helicopter the rest above (679-503). Split-yarding required on center stream. Within designated old growth reserve. Suspension requirements (see soils or fish).
J. Oien 5/96	ROADS: Class II road crossing. PVT land boundary needs to be established prior to layout.
R.Johnson, 10/12/95	SOILS/WATERSHED: Bottom of unit forested wetland, primarily Kitkun on slopes less than 40%. Partial suspension on wetlands (BMPs 12.5, 13.9). Break about 350' to Tolstoi and McGilvery on slopes generally 45-75%. Area characterized by numerous small rock outcrops and rock faces and associated steeper slopes, with flatter benches between. Major rock wall about 950' center of unit, continues E and W in unit. Above 900' generally Traitors and McGilvery on slopes 70 to 75%. Another rock wall above this. Unit designed for partial suspension down to road for MMI3, McGilvery, non-streams (BMPs 12.5, 13.9, 13.16; TLMP 1991). Upper portion designated helicopter yarding as unit 679-503 where suspension not obtainable (BMP 13.9). Suspect 679-503 will have to be brought downslope from elevation shown on unit card because of blind leads from rock faces and benches. Slope break buffer above stream, V-notch and bowl N side unit because rock walls, seeps, wetlands, McGilvery, MMI4, unstable, steep slopes, and stream flows to lake (BMPs 12.6a, 12.5, 13.5, 13.16; TLMP 1991). Delete from rock wall about 950' to bottom of this E facing ridge adjacent to V-notch also because of same reasons. Rock face about 600' this ridge continues around to S facing portion unit but does not seem to continue through unit. Portion E end unit deleted by State selection. Two additional G&W streams in center of unit (BMP 13.16). Relocation of 2160 road down slope should avoid blasting through rock outcrops and faces on original route (BMPs 14.6, 14.7). Delay harvest on Kitkun (TLMP 1996).
D.Kuntzsch, 7/96	FISHERIES: This unit was not visited by fisheries. Follow soils/watershed recommendations for protection of V-notches and streams. If this unit is selected for harvest, fisheries will field review during unit layout.
M.Pacheco 7/6/95 M.Dillman 10/96	WILDLIFE: Deer sign and game trails seen throughout unit. This unit is within an old growth reserve so was not surveyed in 1996. If current policy changes and this unit is harvested, wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested, wildlife will need to conduct surveys in the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96 R.J. 10/95	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. G&W streams requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 679-320

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W
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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-321 ACRES: 23 VOL: 428 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-44,45 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windthrow risk, portion downhill yarded, high elev. Productivity of site is moderate. Difficult terrain - potential blind leads in upper portion. Verify feasibility and modify unit bdry as required. Profiles needed. Reach where possible with cable and helicopter the above portion (504). Downhill yarding will be difficult. Maintain cedar component through planting. Within designated old growth reserve Use helicopter around slide chutes. Suspension requirements (see soils or fish).
J. Oien 5/96	ROADS: Avoid open muskeg whenever possible.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 6 (McGilvery - Traitors 60-100%), with small amount 4C (Helm 5-35%) E edge. Minimum of partial suspension for MMI3, forested wetlands, and McGilvery if less than 41% (BMPs 12.5, 13.9; TLMP 1991). Full suspension reccommended. Suspect McGilvery greater than 41%, MMI4, cliffs, disturbance species, slide N center unit based silviculture review and photos; unit probably should be deleted (BMP 13.5; TLMP 1991). Portion above cliff was made into helicopter unit 679-504. Probable streams needing protection (BMP 13.16).
D.Kuntzsch, 7/96	FISHERIES: GIS review shows two class III streams in the unit. Stream protection measures will be identified during unit layout.
C.Tighe 8/96	WILDLIFE: This unit is within an old growth reserve so was not surveyed by wildlife in either 1995 or 1996. If current policy changes and this unit is harvested, wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested, wildlife will need to conduct surveys in the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Leave clumps of small trees untouched along chutes. Minimum of partial suspension.

Chosina Study Area Interim Layout NOI Unit 679-321

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portiol Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

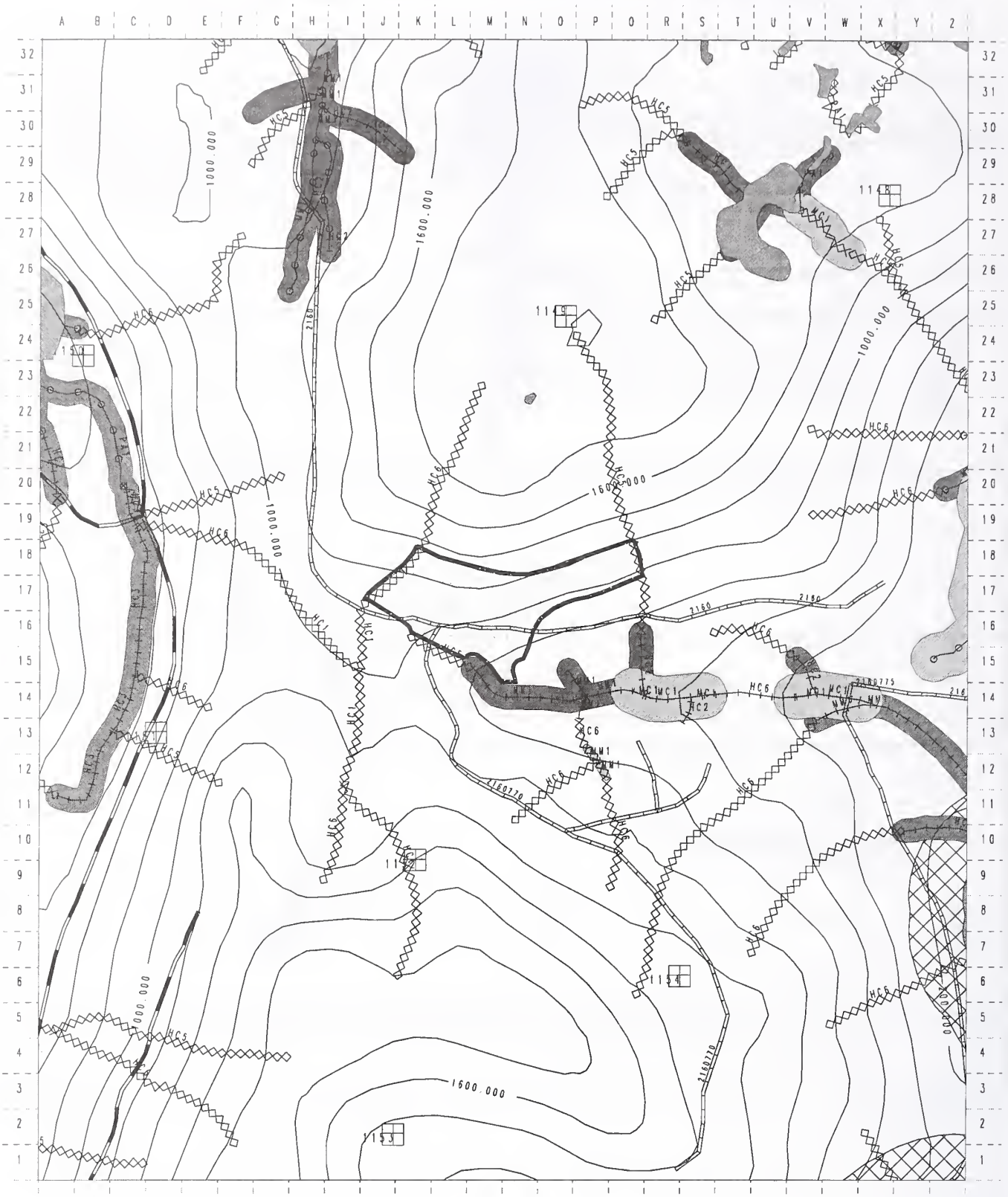
VCU-UNIT#: 679-323 ACRES: 34 VOL: 850 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-44,45 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-61, high windthrow risk, portion downhill yarded, high elev. Within designated old growth reserve. Productivity of site is moderate. Difficult terrain - potential blind leads in upper portion. Verify feasibility and modify unit bdry as required. Profiles needed. Suspension requirements (see soils or fish). Reach where possible with cable - helicopter the unit above (505). Downhill yarding will be difficult. Dropped uneconomic, low volume area to S.E. Avoid cabling over cliffs. Partial cut buffer.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped only in W portion of unit, include 4C (Helm 5-35%), 48C (Helm - Kitkun 5-35%), 33D (StNicholas - McGilvery 35-60%), 20C (Maybeso - Kaikli 5-35%). Minimum of partial suspension for forested wetlands, MMI3, McGilvery (BMPs 12.5, 13.9; TLMP 1991). Silviculture review noted steeper slopes, McGilvery, rock faces, cliffs. These conditions could change this recommendation to possible deletion. Upper portion unit above cliffs made into helicopter unit 679-505. Probable slope break buffer V-notch W boundary unit, protection stream E unit boundary, and additional streams in unit needing protection (BMP 13.16).
D.Kuntzsch, 7/96	FISHERIES: Protect water quality streams (class III and IV) in and near unit per soils instructions. GIS indicates a possible class II TTRA stream along the south unit boundary. If harvested, this should be field verified during layout and appropriate protection applied.
M.Pacheco 7/6/95 M.Dillman 10/96	WILDLIFE: Game trails throughout. This unit is within an old growth reserve so was not surveyed in 1996. If current policy changes and this unit is harvested, recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested, wildlife will need to conduct surveys in the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 679-323

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

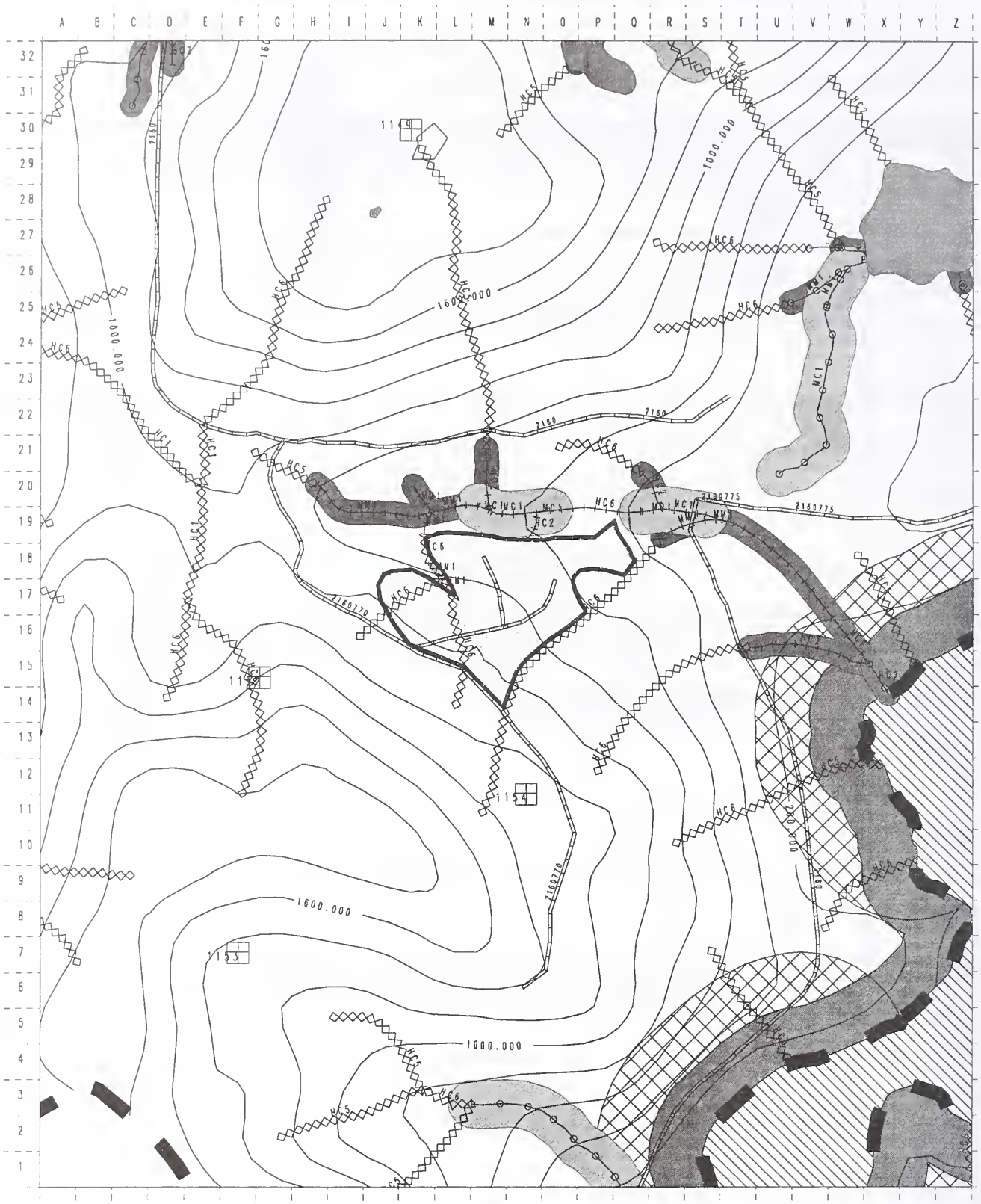
VCU-UNIT#: 679-325 ACRES: 45 VOL: 1093 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-44 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-60, high windthrow risk, mod. elev. Within designated old growth reserve. Productivity of site is moderate. Partial cut buffer. Unit added to the west. Avoid yarding over steep changes in slope to the N.W. , N.E., and N. Several parallel creeks in NW corner.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils not mapped. Estimating 20C (Maybeso - Kaikli 5-35%) bottom unit, 33D and 33E (St. Nicholas - McGilvery 35-75%) rest of unit. Partial suspension for forest wetlands, MM13, and McGilvery (BMPs 12.5, 13.9; TLMP 1991). Keep upper backline below unstable, MM14, snow avalanche area (14EF Shakan 60-150%) (BMP 13.5). Additional protection for cliffs and streams designated by silviculture and fisheries (BMP 13.16).
J. Frank, J. Hannon, 10/11/95	FISHERIES: Stream 1 is a class II blue/ white that needs 100' TTRA buffer. Stream 2 is a class II blue/white TTRA that requires a 120' buffer; this stream becomes a class III orange/white along the unit boundary. It requires at least a slope-break buffer, and possibly an additional buffer. Stream 5 is a class II AHMU orange/ white that requires a 25' buffer (BMP 12.6). On the west boundary, stream 3 is a class III orange/white that requires directional falling, and split yarding or full suspension and immediate slash removal (BMP 13.16). Stream 3 branches about half-way through the unit. The portion of the unit west of stream 3 was added on and has not been field reviewed by fisheries; there may be additional streams in this area of the unit. Recommend using the cliff as the north boundary of the unit.
M.Dillman, B.Johnston 10/4/95 M.Dillman 10/96	WILDLIFE: Bear sign and game trails in unit. This unit is within an old growth reserve so was not surveyed in 1996. If current policy is changed and this unit is harvested, recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested, wildlife will need to conduct surveys in the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension. Keep upper backline below unstable soils and snow slide area.

Chasina Study Area Interim Layout NOI Unit 679-325

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W
E
S

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

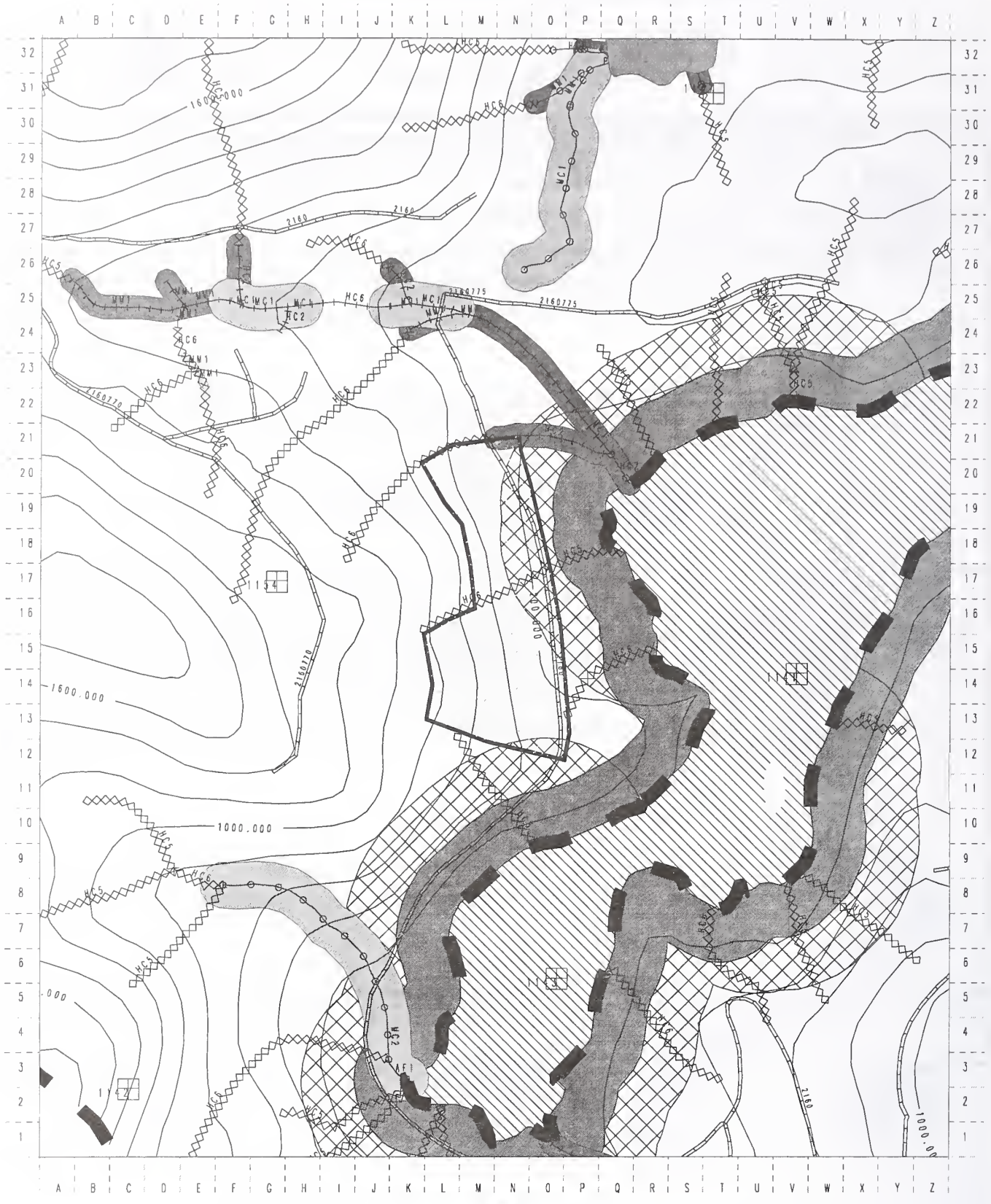
VCU-UNIT#: 679-328 ACRES: 65 VOL: 2193 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-86 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: SL, LS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-88, high windthrow risk. Within designated old growth reserve. Productivity of site is high. Partial cut buffer. Buffers (see fisheries). Move road above estuary buffer. Profiles needed. Unit design calls for cable regeneration method. Verify roads and/or landing locations. Retain stand structure for wildlife where feasible.
J. Oien 5/96	ROADS: Coordinate logging systems with road location and wildlife due to estuary buffer.
R.Johnson, 6/96	SOILS/WATERSHED: Soils not mapped. Wildlife reported very steep. Appears potential problem with slopes, cliffs, McGilvery, MMl, particularly with downhill yarding to road bottom of unit (BMPs 13.5, 13.9; TLMP 1991). Potential to delete most of unit, and expand on bottom to beach buffer. One major V-notch and lesser stream/V-notch center of unit, stream N boundary, and possibly other streams in unit needing protection (BMP 13.16). Possible estuary buffer.
D.Kuntzsch, 7/96	FISHERIES: East unit boundary conflicts with 1000' estuary buffer. Follow soils recommendations for protection of V-notches. Office review indicates a class II TTRA stream along the north unit boundary (100' minimum buffer), and several class lll streams in the unit. Appropriate protection will be identified during unit layout (BMP 13.16, 12.6a).
M.Pacheco 7/7/95 M.Dillman, B.Johnston 9/7/96	WILDLIFE: Bear sign, deer sign and game trails. Wolf scat in muskeg. This unit is within an old growth reserve so was not surveyed during 1996. If current policy changes and this unit is harvested, the unit has been identified as an important travel corridor and partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if the unit is harvested, wildlife will need to conduct surveys in the area prior to harvest. The east boundry conflicts with the estuary buffer as it is currently defined and mapped.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit was surveyed in 1996. No cultural resources were encountered. There are no concerns with the unit. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut.

Chasino Study Area Interim Layout NOI Unit 679-328

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

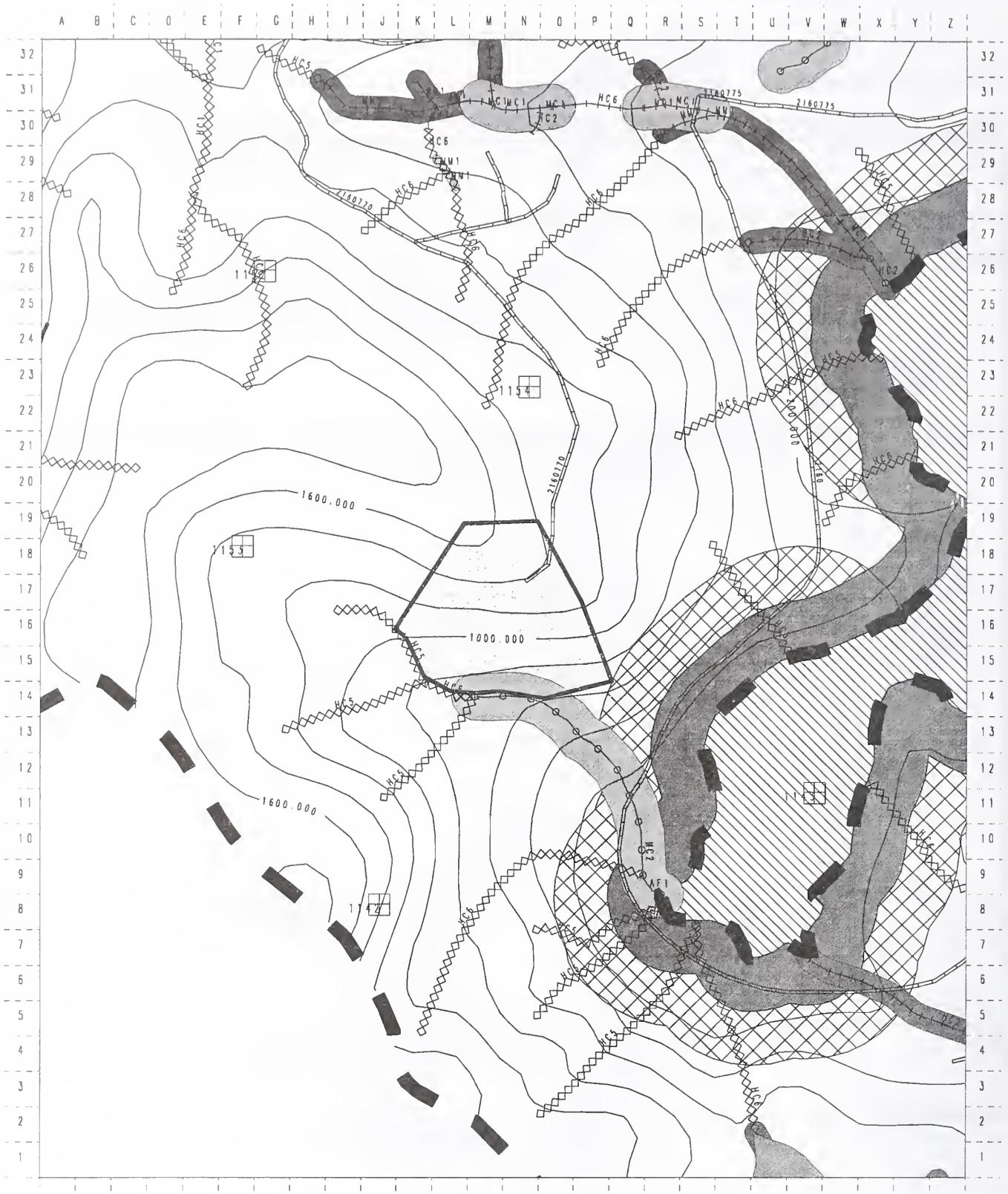
VCU-UNIT#: 679-331 ACRES: 52 VOL: 1233 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-43 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-94, high windthrow risk, high elev. Within designated old growth reserve. Productivity of site is moderate. Field checking altemative regeneration methods. Partial cut buffer. Suspension requirements (see soils or fish). Retain stand structure for wildlife where feasible.
J. oien 5/96	ROADS: Avoid muskeg areas whenever possible.
R.Johnson 6/96	SOILS/WATERSHED: Soils not mapped. Unit does not appear viable as planned. 2160-520 road would have to come from top of 679-325 to access, may require much blasting to reach this unit, and then still may not allow access to all of this unit because of bowl shape of hill side. Upper unit high elevation, very steep, with disturbances. Indications rock faces, cliffs, McGilvery, low volume, MM14, all which not viable unit even for helicopter (BMPs 13.5, 13.9; TLMP 1991). W side lower portion low volume scrub/shrub wetland not harvestable (BMP 12.5). Leaves only small area SE portion bottom unit, which appears volume class 4. Stream, possibly V-notch, S boundary require protection as flows to estuary (BMPs 12.6, 13.16). Probably not viable unit.
D.Kuntzsch, 7/96	FISHERIES: Office review indicates a class II blue/white TTRA stream along the south unit boundary that will require at least 100' no-cut buffer. At a minimum there are two class III streams (probably orange/white) near the west unit boundary. Probably additional streams within the unit. Will need to verify with field review during layout (BMP 13.16, 12.6a). Class III orange/white streams require directional falling, and split yarding or full suspension over, and immediate removal of introduced logging debris (BMP 13.16).
C.Tighe 8/96	WILDLIFE: This unit is within an old growth reserve so was not surveyed by wildlife in either 1995 or 1996. If current policy changes and this unit is harvested, recommend partial harvest because unit has been identified as an important wildlife travel corridor. This will help maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested wildlife will need to conduct surveys in the area prior to harvest. Maintain 1000 foot estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This very steep, low sensitivity unit was surveyed in 1996. No cultural resources were found. There are no concerns with the unit. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Possible delete.

Chasina Study Area Interim Layout NOI Unit 679-331

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1998

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

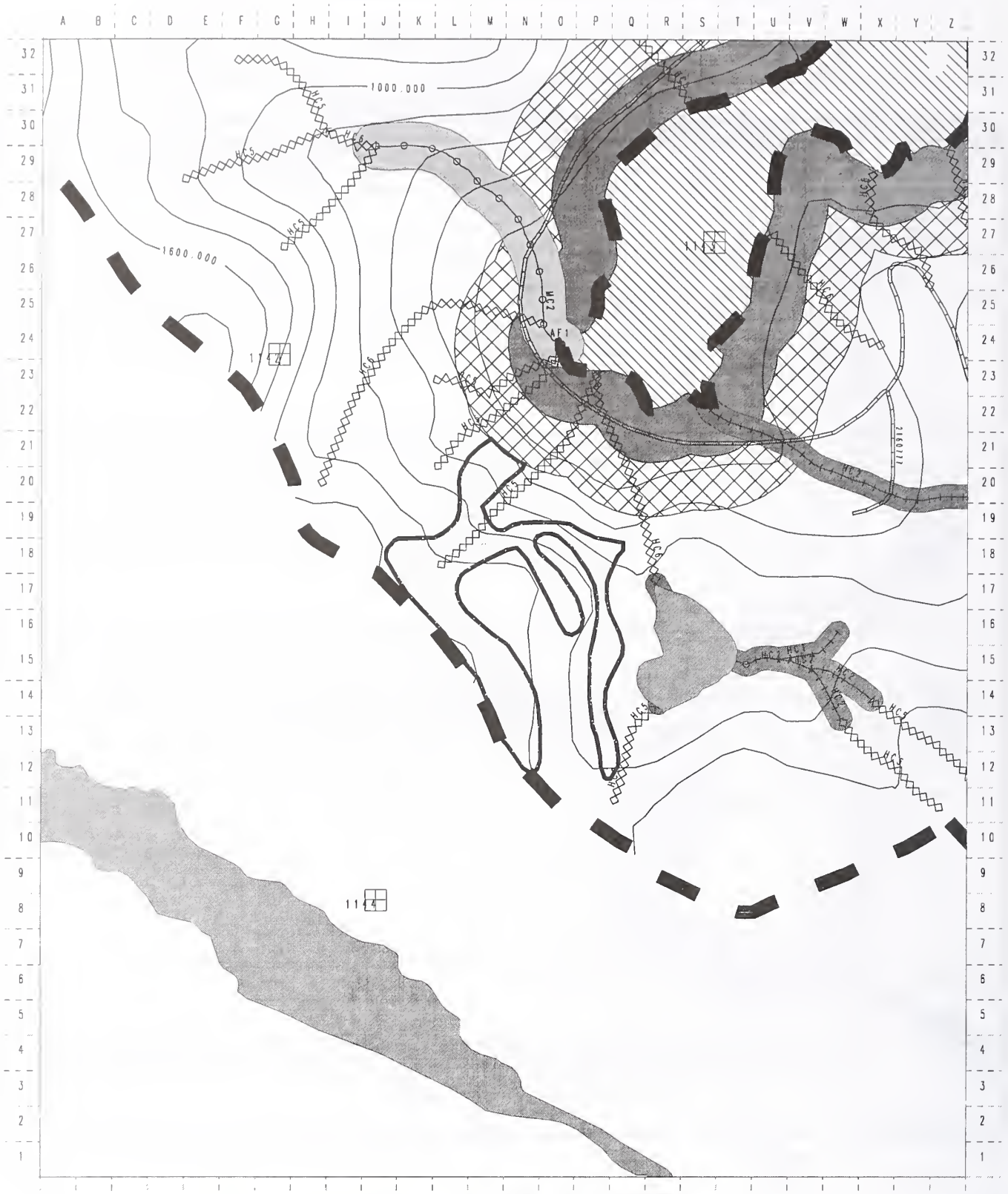
VCU-UNIT#: 679-337 ACRES: 50 VOL: 1302 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-87 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-124, high windthrow risk, portion downhill yarded, high elev. Within designated old growth reserve. Productivity of site is moderate. Very broken unit. Uneconomic, low volume area scattered throughout. Avoid oversteepen areas scattered throughout (see silvi field map/photo). Helicopter log only for soil protection. Maintain YC component by planting. Retain stand structure for wildlife where feasible.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils only partially mapped, include 33D (StNicholas - McGilvery 35-60%), 74E (Kupreanof 60-75%), 35E (StNicholas - Tolstoi 60-75%), 87CD (Grindall - StNicholas 5-60%). Silviculture and fisheries deletions and protections desirable for McGilvery, cliffs, over steep, low volume, streams, lake, in conjunction with helicopter logging (BMPs 12.5, 12.6, 12.6a, 13.9, 13.16; TLMP 1991). Possible upgrade needed for protection stream and V-notch NW portion unit and stream NW unit boundary to O&W (BMP 13.16).
D. Kuntzsch, J. Frank, 10/3/95	FISHERIES: Stream 1 is class III orange/white stream. The lake requires a 200' no-cut/300' partial cut buffer (BMP 12.6). The lake should be surveyed for resident fish. Stream 2 is a class III orange/ white along the unit boundary. It is contained within a deep V-notch that requires a slope break buffer plus a 50' windfirm buffer (may need to feather edge or diameter cut this 50' to achieve windfirmness) (BMP 12.6). Streams 4,5, and 6 are class III green/whites. Believe stream 4 is the only one of the three that enters the unit; the other two are below the north unit boundary. Green/white streams require directional falling, and split yarding (where practical) or partial over. Clean streams of introduced debris before the end of the operating season or before the yarder leaves the area (BMP 13.16). Orange/white streams require directional falling, and split yarding or full suspension over, and immediate removal of introduced logging debris (BMP 13.16).
B.Johnston, G.Lawton 10/3/95 M.Dillman 10/96	WILDLIFE: Abundant wildlife signs. Deer browse, beds and pellets. Wolf and bear tracks and scat. This unit is within an old growth reserve so was not surveyed in 1996. Unit has been identified as important travel corridor so if current policy changes and this unit is harvested, recommend partial harvest to maintain forest structure and lessen impact on wildlife migration and dispersal. Also, recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. If this unit is harvested, wildlife will need to conduct surveys in the area prior to harvest. Small northern tip is in an estuary buffer as it is curently mapped in GIS.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. O&W streams require DF, full over or SY and cleaning of introduced debris immediately.

Chastina Study Area Interim Layout NOI Unit 679-337

Mapscale 1:15840 (4 inch to Mile)



- Class 1 Stream
- Class 2 Stream
- Class 3 Stream
- Existing Roads
- Proposed Roads
- Unit Boundary
- Salt Water
- Fresh Water Lakes
- Estuary Buffers
- 500' Beach Buffer
- No Cut Stream Buffers by Chantyp
- Partial Cut Stream Buffers by Chantyp

N W E S

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

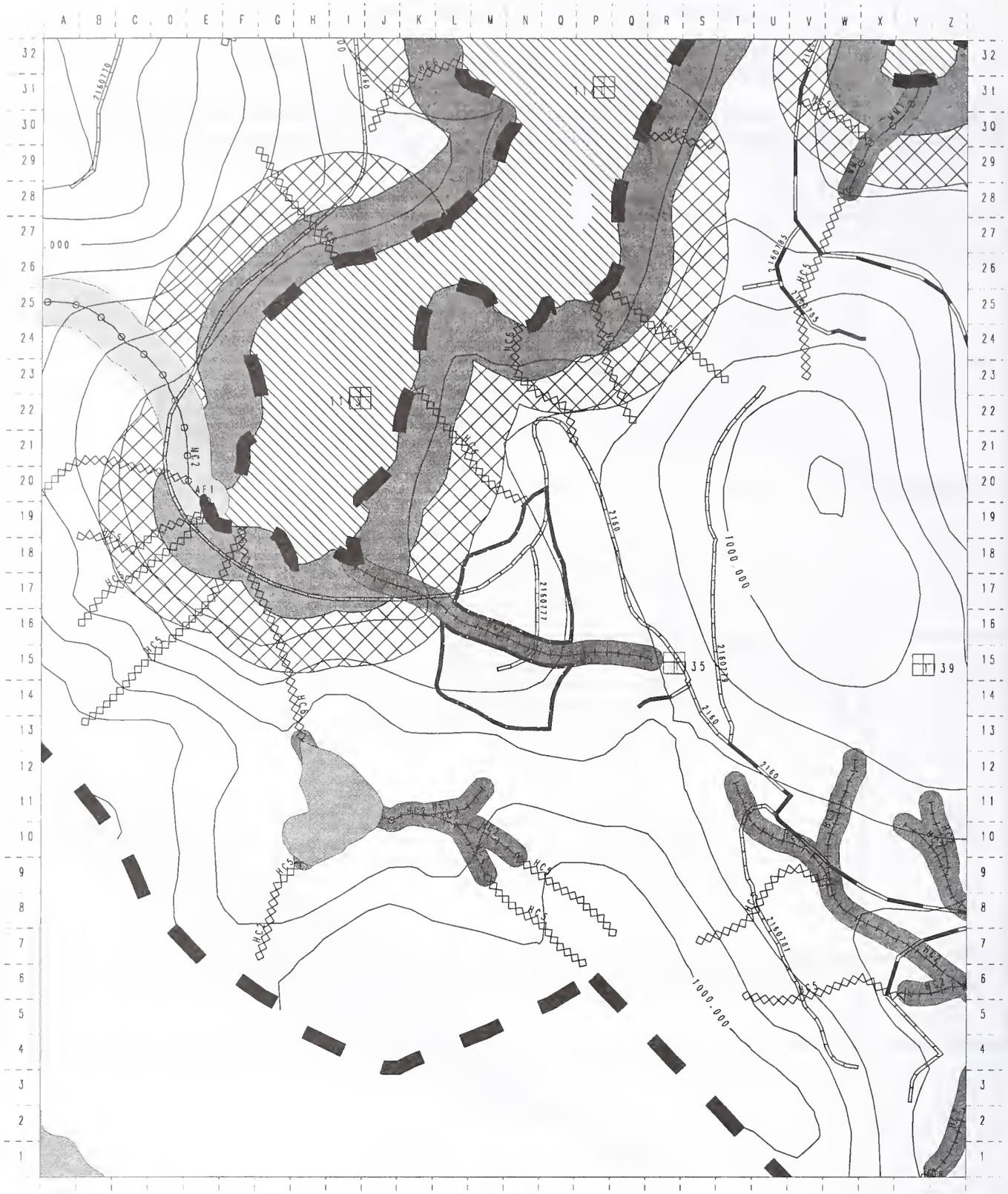
VCU-UNIT#: 679-341 ACRES: 36 VOL: 945 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-87 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-106, low windthrow risk. Within designated old growth reserve. Productivity of site is moderate. Partial cut buffer. Retain stand structure for wildlife where feasible.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped primarily 74E (Kupreanof 60-75%) with 32D (StNicholas 35-60%) N part unit, and 33D (StNicholas - McGilvery 35-60%) S part unit. Partial suspension for MM13 and forested wetlands (BMPs 12.5, 13.9). Probably need to bring upper S boundary of S unit down below cliffs and McGilvery center portion unit. May require additional spur to reach SW corner. Not evident if class I stream and why two portions of unit. Appears too steep, but at minimum protection of stream and V-notch (BMP 13.16). Protection needed stream W side S unit. Possible to expand unit to E, N, and W.
K. McCartney, D. Kuntzsch, 7/11/96	FISHERIES: Stream 1 is a class IV green/ white. Stream 1 turns into a class III orange/ white just above the confluence with stream 2. Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. The class III orange/ white streams require directional falling, and split yarding, or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The class IV green/ white streams require directional falling, and split yarding (where practical), or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman, B.Johnston 8/28/95 M.Dillman 10/96	WILDLIFE: Deer browse and pellets seen. Game trails also seen. This unit is within an old growth reserve so was not surveyed in 1996. Unit identified as important travel corridor so if current policy changes and the unit will be harvested, partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if unit is harvested wildlife will need to conduct surveys in the area prior to harvest. Mine shaft located in unit. Maintain 1000 foot estuary buffer.
J.Baichtal 10/22/96	GEOLOGY/MINERALS:This No minerals concerns, access for harvest will improve mineral exploration access. Unit is partially underlain by massive to thin-bedded marble interbedded with phyllite. Karst features are developed within this portion of the unit. Soils are a mosaic of shallow to deep residual soils and shallow organic soils atop the epikarst ridges. One deep vertical shaft accepting a stream was identified within the northeastern unit corner. A 100 foot no harvest buffer is required around the shaft and stream feeding into the shaft as per the standards and guidelines outlined in the RSDEIS for the TLMP. Partial suspension required on remainder of unit underlain by marble for karst appears to be of at least moderate vulnerability. LANDS:
T.Fifield 10/28/96	CULTURAL: This unit was surveyed in 1996 to determine if historic materials associated with the San Juan Shaft are located in or near the unit. Wildlife reported finding the mine shaft within the proposed unit boundary. The shaft was not located after two attemps to locate it. If this shaft is located during layout, archaeology should be alerted to assess the significance and determine mitigation measures if needed. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 679-341

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Warfield on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-355 ACRES: 56 VOL: 1737 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-87 1/4 QUAD: CRG B-1 SE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-106, low windthrow risk, portion downhill yarded, mod. elev. Within designated old growth reserve. Productivity of site is moderate. Maintain setting width between units. Buffers (see fisheries). Retain stand structure for wildlife where feasible.
J. Oien 5/96	ROADS: No concerns.
R. Johnson, 6/96	SOILS/WATERSHED: Soils mapped primarily 3E (Vixon - Traitors 60-75%), with 3D (Vixon, Traitors 35-60%), 6 (McGilvery - Traitors 60-100%). Partial suspension for MMI3 and McGilvery (BMP 13.9; TLMP 1991). Lower boundary NW corner above cliff/rock face. Stream protection, per fisheries (BMP 13.16). Potential additions S, SW, NE portions of unit.
S. Deck, K. Buckley, 7/10/96	FISHERIES: Stream 1 is a class III orange/ white for 20 meters into the unit; it then becomes a class IV green/ white. Stream 2 is a class III orange/ white. Stream 3 is a class III orange/ white. Steam 3 is a class III orange/ white. Stream 5 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
C.Tighe 8/96	WILDLIFE: This unit is within an old growth reserve so was not surveyed by wildlife in either 1995 or 1996. Unit has been identified as an important travel corridor for wildlife so if current policy changes and this unit is harvested, partial harvest is recommended to maintain forest structure and to lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if unit is harvested wildlife will need to conduct surveys in the area prior to harvest. Maintain 1000 foot estuary buffer.
J.Baichtal 10/22/96	GEOLOGY/MINERALS:No minerals concerns, access for harvest will improve mineral exploration access. Unit is partially underlain by massive to thin-bedded marble interbedded with phyllite. Karst features are developed within this portion of the unit. Soils are a mosaic of shallow to deep residual soils and shallow organic soils atop the epikarst ridges. Numerous sinks and epikarst ridges reported by Fisheries Staff. Unit not visited by Forest Geologist. Resource concerns need to be addressed during unit layout. Mitigation if necessary as per the standards and guidelines outlined in the RSDEIS for the TLMP. Partial suspension required on portion of unit underlain by marble based on discription by field recon team. Karst appears to be of at least moderate vulnerability. LANDS: CULTURAL: This unit was surveyed in 1996 to determine if historic materials associated with the Croesus adit are located in or near the unit. No cultural materials were located. There are no concerns with the unit as planned. VISUALS:
T.Fifield 10/28/96	
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 679-355

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

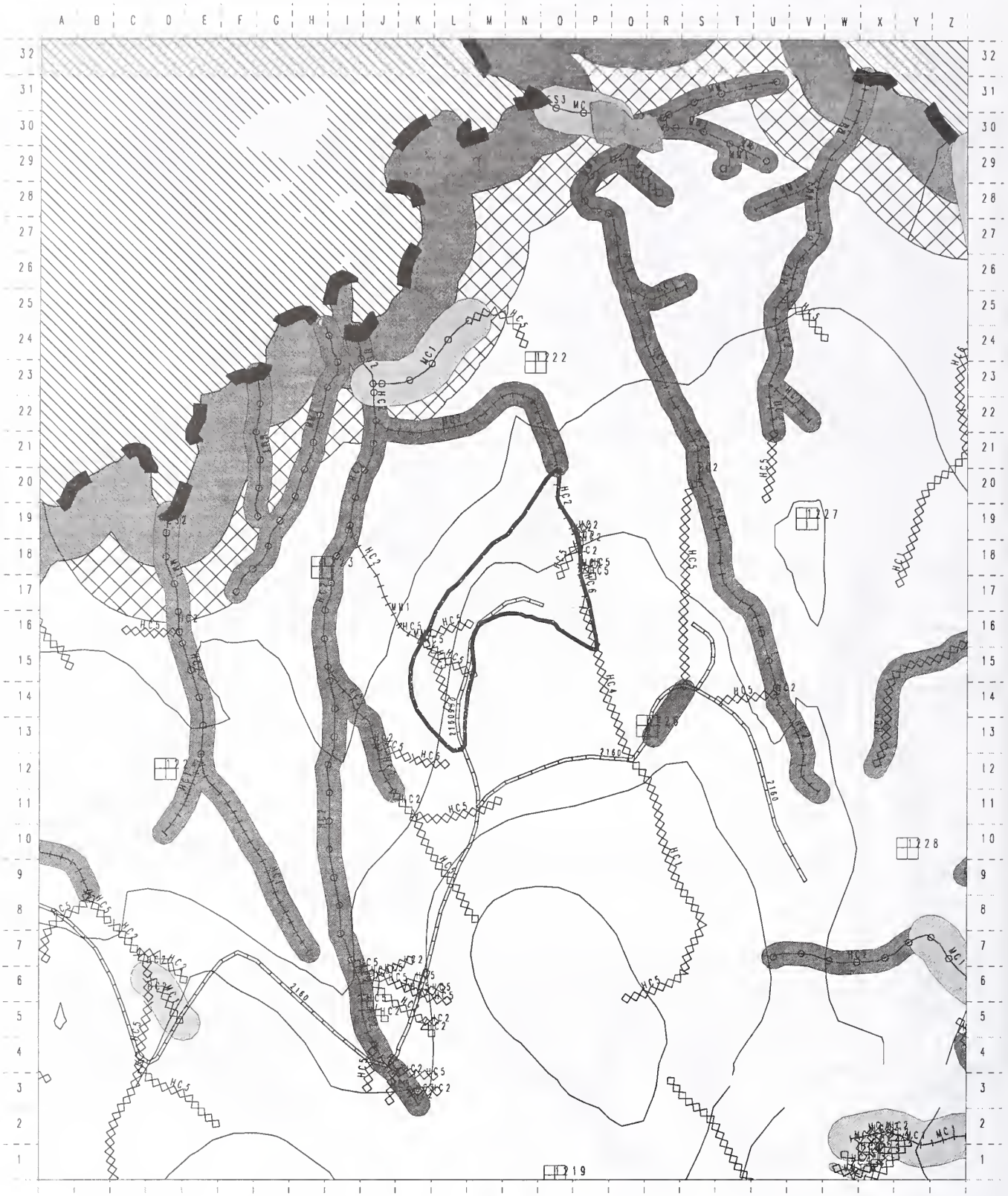
VCU-UNIT#: 679-361 ACRES: 38 VOL: 809 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '91-390-225 1/4 QUAD: CRG B-1 SE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67903-47, low windthrow risk, high mistletoe present. Unit changed to provide proportionality of volume classes. Productivity of site is low. Partial cut buffer. Set landings near edge of cliff. Maintain YC component through planting if needed. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to equipment (501). Uneconomic, low volume area surrounding unit.
J. Oien 5/96	ROADS: No concerns.
Field D. J. Landwehr 8/16/95 EIS R.Johnson.	SOILS/WATERSHED: Soils Tolstoi, StNicholas, McGilvery. Slopes 30-80%. High MMI soils throughout most of the unit. About two acres forested wetland. Partial suspension is required throughout the unit (BMPs 13.9, 12.5). A 100' buffer is required at least on the lower portion of stream 1 (BMPs 12.6, 12.6a). The remainder of the stream should be designated O&W, with directional felling, and split yarding or full suspension, and cleaning of introduced debris immediately (BMP 13.16). Two smaller streams on the west side of the unit should receive G&W protection (DF, stream cleaning before the end of the operating season). No road line, but believe road can be located with stub outs to several landings (BMP 14.2).
M. Becker, K. Buckley, 8/28/95, 8/29/95	FISHERIES: Stream 1 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). The upper section of this stream is a class III orange/ white. Stream 2 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). The upper section of this stream is a class III orange/ white. Stream 3 is a class III orange/ white. Stream 4 is a class III orange/ white. Stream 5 is a class III orange/ white. Stream 6 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 7 is a class III orange/ white. Stream 8 is a class III orange/ white. Stream 9 is a class III orange/ white. The orange/ white streams require directional falling, and split yarding or full suspension and immediate removal of introduced debris from the stream channel (BMP 13.16).
M.Pacheco 6/27/95. C.Tighe, B.Johnston, A.Mueller 6/26/96 & 7/19/96	WILDLIFE: Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/26/96 A pair of lesser yellow-legs in muskeg helispot. 7/19/96 Deer pellets and beds, bear scat, and game trails throughout the area. Unit 679-501 is the helicopter potion of this unit.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: Although survey of this unit was planned for 1996, closer inspection suggests it lies in low sensitivity terraine. The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. O&W streams require DF, SY or full over, and cleaning of introduced debris immediately. G&W streams requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Partial suspension required. "Unit added from the preferred alternative due to proportionlity based on acres."

Chasina Study Area Interim Layout NOI Unit 679-361

Mapscale 1:15840 (4 inch to Mile)



- Class 1 Stream
- Class 2 Stream
- Class 3 Stream
- Existing Roads
- Proposed Roads
- Unit Boundary
- Salt Water
- Fresh Water Lakes
- Estuary Buffers
- 500' Beach Buffer
- No Cut Stream Buffers by Chantyp
- Partial Cut Stream Buffers by Chantyp

Created by Sally Warfield on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

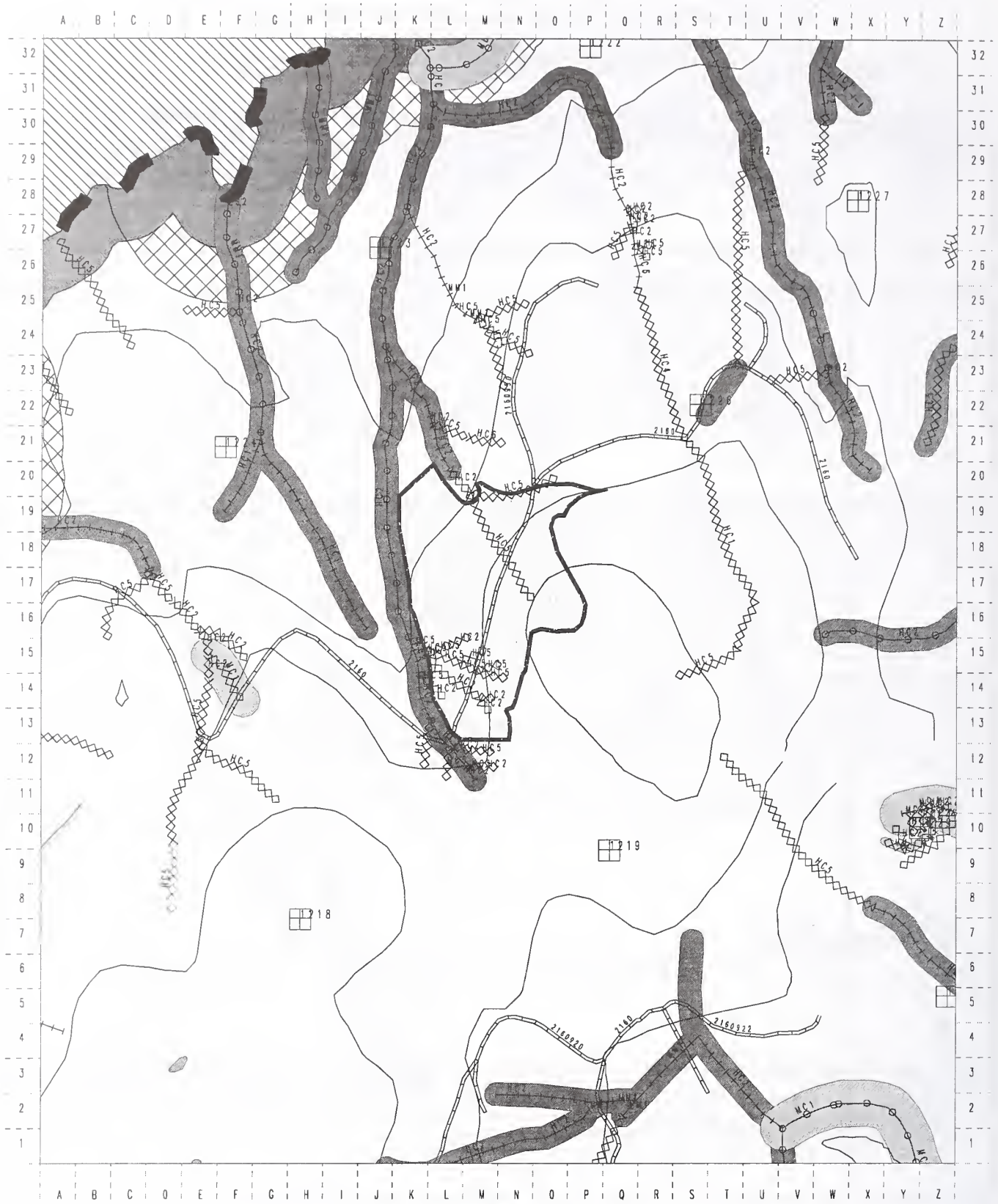
VCU-UNIT#: 679-363 ACRES: 66 VOL: 1359 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '91-390-225 1/4 QUAD: CRG B-1 SE 1/4 LOGGING SYSTEMS: HE,RS,LS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67903-54, low windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is moderate. Partial cut buffer. Maintain setting width between units. Unit design calls for clear-cut regeneration method. Verify roads and/or landing locations. Uneconomic, low volume area surrounding. Six acres dropped for cliffs and low value timber.
J. Oien 5/96	ROADS: No concerns.
Field D. J. Landwehr 8/17/95 EIS R.Johnson	SOILS/WATERSHED: Soils StNicholas, Kaikli, with McGilvery and Tolstoi. Slopes 20-130%. Deleted low volume forested wetland north end (BMP 12.5), and 4A very steep McGilvery southeast corner. Remaining unit: High MMl soils upslope of the road and downslope of the road north of the stream buffer. Expand the 100 foot buffer in the north portion of the unit to encompass lower portions of the V-notches because of MMl 4 soils in V-notches (BMPs 13.16, 13.5). Approximatedly I0 acres of forested wetlands occur along the proposed road line in center, southwest, south boundary. Partial suspension is required over the entire unit (BMPs I3.9, 12.5). Helicopter may be needed in the area upslope of road and slope break along water quality creeks. See fisheries section of this card for stream course protection. Preliminary road line reviewed and appears feasible (BMP 14.2). Area about 100' full bench and end haul with controls on blasting where road crosses 70% slope less than 100' up slope from O&W creek (BMPs 14.3, 14.6, I4.7, 14.12). Additional roads may be required down slope portion unit below the break; profiles may be necessary.
D. Kuntzsch, K. Buckley, M. Becker, 8/25/95	FISHERIES: Stream 1 is a class I blue/white that requires a I20' TTRA buffer (BMP I2.6). Stream 2 is a class II blue/white that requires a 120' TTRA buffer (BMP 12.6); just downstream of the junction with stream 16, stream 2 becomes class III orange/white and requires a slope break buffer. Streams 16 and I7 are class III green/white tributaries to stream 2. Stream 4 is a class III orange/white tributary to stream 1. Streams 8 and 15 are green/white class III tributaries to stream 4. Stream 14 is an orange/white class III tributary to stream 4. Stream 5 is a class III orange/white tributary to stream 1. Streams 6, 11, 9, and 12 are class III orange/white. The class III orange/white streams require directional falling, and split yarding or full suspension over, and immediate slash removal (BMP 13.16). The class III green/ white streams require directional falling, and split yarding (where practical) or partial over. Stream road crossings will require fish passage and timing on blue/white streams #1 and 2 (BMP 14.I4). Follow soils protection instructions for V-notches.
M. Pacheco 6/27/95 C.Tighe, B.Johnston, A.Mueller 6/26/96	WILDLIFE: Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There were two sensitive plants, Platanthera chorisiana, the choris bog orchid, found by a botanist in this unit in 1995. Harvesting this unit as it is currently laid out will destroy these plants. A pair of lesser yellow-legs was seen in the muskeg helispot.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: May have to drop south end of unit at O/W streams. Partial suspension required for soils. Helicopter maybe needed upslope of road and slope breaks water quality creeks. Include lower portions large v-notches in 120' stream buffers. "Unit added from the preferred alternative due to proportionality based on acres." Overstory removal diameter of 16" DBH on northern I/2 of unit. Possible patch cuts between streams at southern end between streams. Several 1-2 acre patches. Retain 10% at north end and approximatley 75% in south end. 6 acres dropped.

Chesino Study Area Interim Layout NOI Unit 679-363

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-367 ACRES: 40 VOL: 778 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '71(51)-1472-46 1/4 QUAD: CRG B-1 SE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67903-58, low windthrow risk. Productivity of site is moderate. Partial cut buffer. Uneconomic, low volume area surrounding. Split-yarding required on stream where possible. Dropped 4 acres due to scrub timber.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 57D (Petrel 35-60%), with 550C (StNicholas - Kaikli 5-35%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). Probable adjustment of boundary lines to exclude and protect non-harvestable low volume wetlands (BMP 12.5), and to delineate harvestable unit. Protection of streams per fisheries (BMPs 12.6a, 13.16).
D. Kuntzsch, M. Becker, 9/1/95	FISHERIES: Stream 6 along east and north boundaries is a class II blue /white that requires a slope break buffer plus 100' TTRA (BMP 12.6). At the concfluence of streams 7 and 6, stream 6 becomes a class III orange/white. Recommend slope break buffer for this reach of stream 6; in some cases the slope break is a rock ledge or cliff. Streams 5, 7, 8, 9, and 10 are class III orange/white. Below the unit, stream 1 is a class II orange/white, but in the unit it is a class III green/white; stream 3 is a class III green/white tributary to stream 1. Stream 2 is a class III orange/white and stream 4 is a class III green/white (trib to stream 2). The class III orange/white streams require directional falling, and split yarding or full suspension over, and immediate slash removal (BMP 13.16). The class III green/white streams require directional falling, and split yarding (where practical) and partial suspension over. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman, B.Johnston 8/31/95 C.Tighe, B.Johnston, 7/11/96	WILDLIFE: Deer, bear and wolf signs. Two wolf killed deer found. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit is within a half mile of known baeagle nest. Road construction must be accomplished in accordance with the requirements of the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service needs to be documented. 7/11/96 Deer sign was seen throughout the unit. Maintain 1000 foot estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Partial suspension required. Expect wetland soils unit falldown. Unevenaged group selections, 1-2 acres in size covering 1/5 of the unit. Select largest diameter stumps (mainley cedar). Could be in strips for easy yarding.

Chasina Study Area Interim Layout NOI Unit 679-367

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

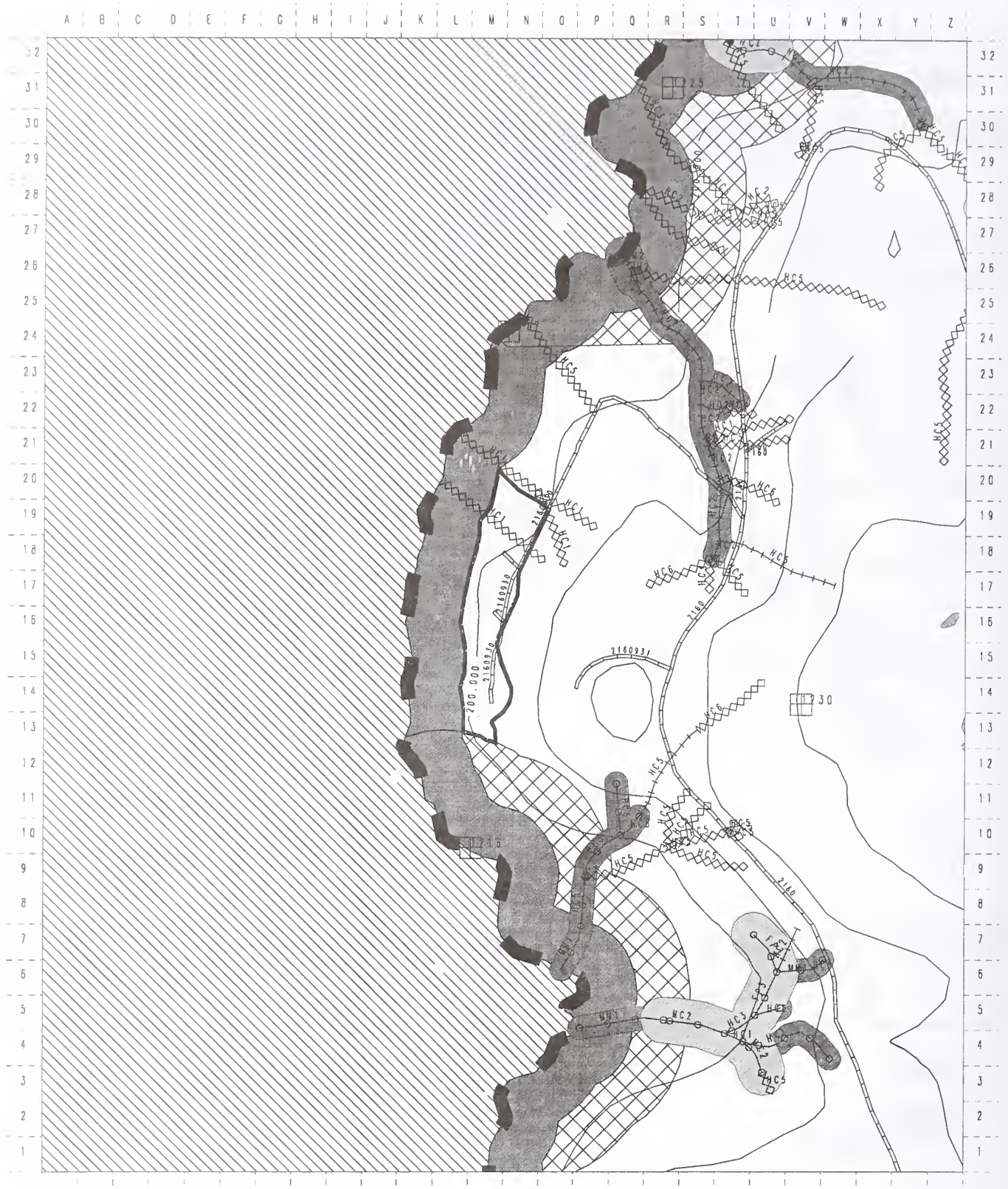
VCU-UNIT#: 679-376 ACRES: 23 VOL: 310 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '71(51)-1472-45/'91-390-150 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67903-16, low windthrow risk. Retain stand structure for wildlife where feasible. Type D clear-cut. Productivity of site is low. Uneconomic, low volume area surrounding. Dropped NE edge - low volume. Split-yarding required on stream. Buffers (see fisheries).
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%), with 3D (Vixen - Traitors 35-60%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). Stream protection per fisheries (BMP 13.16).
D. Kuntzsch, B. Steel, R. Reeves, 8/1/95 K.McCartney, M.Solomon, 6/26/96	FISHERIES: Stream 1,2, and 3 are class IV green/white systems. They require directional falling, and split yarding (where practical) and partial suspension (BMP 13.16, 12.6). Clean streams of introduced logging debris before the end of the operating season or before the yarder leaves the area.
C.Tighe, B.Johnston, A. Mueller 6/19/96	WILDLIFE: This unit has been identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen the impact on wildlife migration and dispersal. This unit was not surveyed during 1995 as it did not meet the habitat requirements called for in the current goshawk protocols.. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit is within one-half mile of a known bald eagle nest. Road construction must be accomplished in accordance with the requirements of the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service needs to be documented.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit was surveyed in 1996. No cultural materials were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 679-376

Mapscale 1:15840 (4 inch to Mile)



Plotted by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-378 ACRES: 31 VOL: 703 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '71(51)-1472-45 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67903-38, low windthrow risk, portion downhill yarded. Retain stand structure for wildlife where feasible. Partial cut buffer. Productivity of site is low. Field checking alternative regeneration methods. Maintain setting width between units.
J. Oien 5/96	ROADS: Evaluate temporary roads for specified road criteria.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%), 57D (Petrel 35-60%), 3D (Vixen - Traitors 35-60%). Primarily forested wetlands, minimum of partial suspension (BMPs 12.5, 13.9). Protection streams per fisheries (BMPs 12.6a, 13.16a).
D. Kuntzsch, B. Steel, R. Reeves, 8/1/95	FISHERIES: Stream 1 is a class II blue/white (TTRA) along most of the west unit boundary. Approximately at the confluence of stream 6, stream 1 becomes a class III orange/white that requires at least a slope break buffer and probably a 25-50' windfirm edge to protect the V-notch. Streams 3, 4, and 5 are class III orange/white, but are outside the current south boundary of the unit. Streams 6 and 7 are class III orange/white. Streams 9 and 10 are class II blue/ white (TTRA) that change to orange/ white class III. The class III orange/ white streams require directional falling, and split yarding or full suspension, and immediated slash removal (BMP 13.16, 12.6). The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area. Roads crossing blue/white streams will require fish passage and timing (BMP 14.14).
C.Tighe, B.Johnston 7/11/96	WILDLIFE: This unit has been identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen the impact on wildlfe migration and dispersal. This unit was not surveyed during 1995, as it did not meet the habitat requirements called for in the current goshawk protocols. Recommend leaving live reserve trees and snags where possible to maintain habitat struture and snag density. Deer sign seen throughout unit.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Minimum partial suspension. Delete 7 acres (2 for uneconomical scrub, 2 steep, 2 unreachable).

Chasina Study Area Interim Layout NOI Unit 679-378

Mapscale 1:15840 (4 inch to Mile)



- Class 1 Stream
- Class 2 Stream
- Class 3 Stream
- Existing Roads
- Proposed Roads
- Unit Boundary
- Salt Water
- Fresh Water Lakes
- Estuary Buffers
- 500' Beach Buffer
- No Cut Stream Buffers by Chantyp
- Partial Cut Stream Buffers by Chantyp

N W E S

ated by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-379 ACRES: 5 VOL: 250 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '71(51)-1472-45 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HEL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901- , low windthrow risk. Productivity of site is moderate. New road option from east. Field checking alternative regeneration methods. Uneconomic, low volume area surrounding.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%), with 4C (Helm 5-35%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). Probable adjustment boundary lines for harvestable timber, particularly deletion center S line for exclusion low volume. No streams evident, possible non-streams should be protected by partial suspension (BMP 13.16). Changed from helicopter to road and cable logging, to helicopter yarding, full suspension should be provided (BMP 13.9).
D.Kuntzsch, 7/96	FISHERIES: Office review revealed no apparent fisheries concerns.
C.Tighe, B.Johnston, A.Mueller 6/19/96	WILDLIFE: This unit is within one-half mile of a known bald eagle nest. Road construction must be accomplished in accordance with the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and Forest Service. Written coordination with the U.S. Fish and Wildlife Service needs to be documented. This unit did not rate as a high priority area for wildlife because of its size, only 3 acres. It was not surveyed during 1995. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. 3 acres with helicopter.

Chasina Study Area Interim Layout NOI Unit 679-379

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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ted by Sally Merfeld on November 01, 1998

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

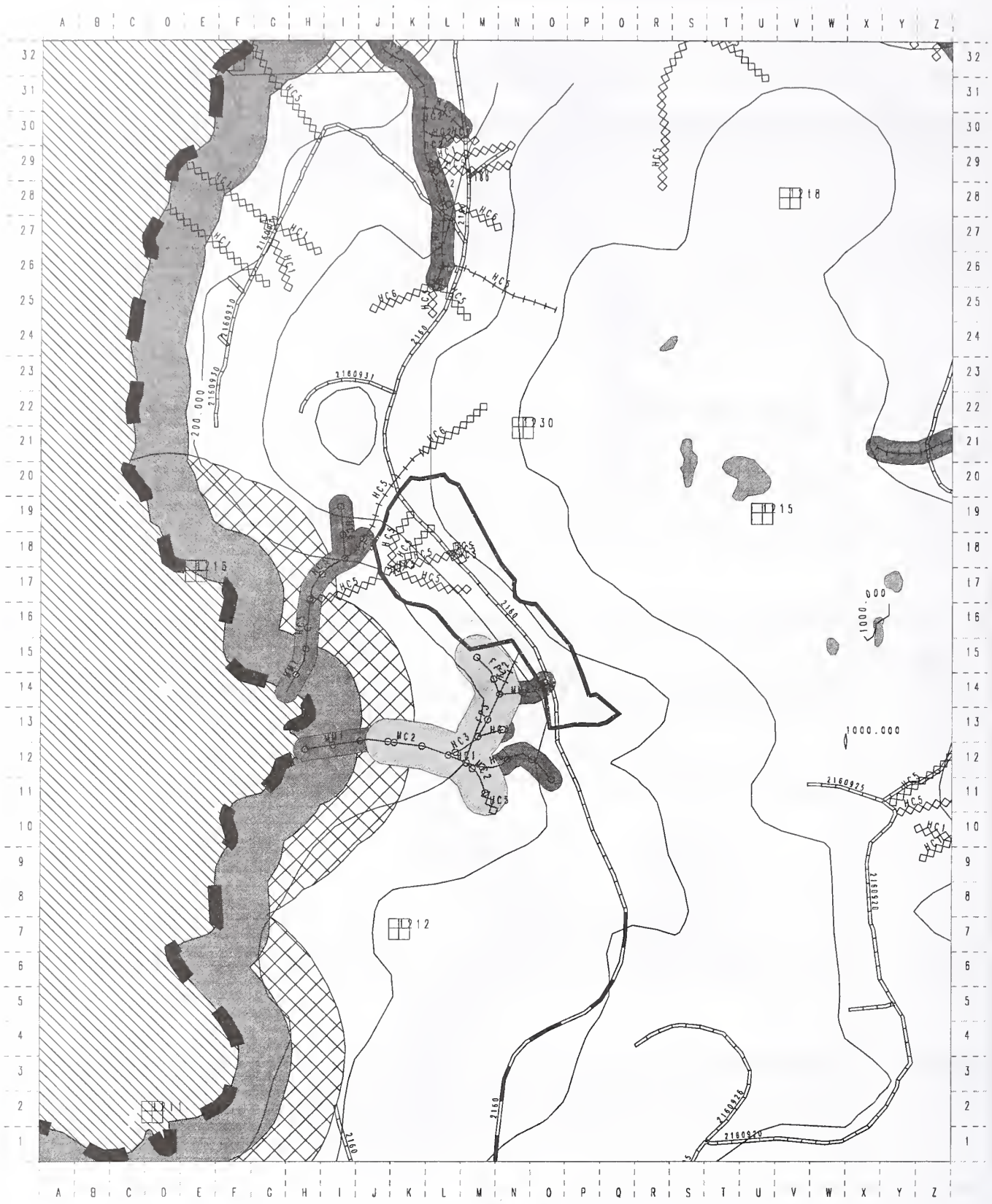
VCU-UNIT#: 679-382 ACRES: 44 VOL: 1276 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '71(51)-1472-44 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67903-11, high windthrow risk, portion downhill yarded. Retain stand structure for wildlife where feasible. Partial cut buffer. Productivity of site is low. Maintain setting width between units. Field checking alternative regeneration methods. Road line was moved upslope and further east. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection. (502).
J. Oien 5/96	ROADS: Numerous stream crossings - evaluate split yarding and road network.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 1C (Vixen 5-35%), 3D (Vixen - Traitors 35-60%), 4D (Helm 35-60%), with 4C (Helm 5-35%), 550C (StNicholas - Kaikli 5-35%), 40D (Sarkar - McGilvery 35-60%). Partial suspension for areas of forested wetland, McGilvery, karst (BMPs 12.5, 13.9; TLMP 1991). Appears slopes to E steeper than mapped, maybe MMI3, which requires partial suspension, if so (BMP 13.9). Concern relocation of road upslope may require full bench, end haul, and blasting (BMPs 14.2, 14.6, 14.7, 13.5, 14.12). Protect other streams prescribed by fisheries (BMPs 13.16, 12.6, 12.6a). Potential blowdown of buffers.
K. McCartney, H.Roerick, K.Buckley, 8/1/95 B. Johnston, K. Buckley, M. Solomon, R. Johnson, 6/21/96	FISHERIES: Stream 4 is a class I blue/ white streams that requires a 200' TTRA buffer. Stream 1 is a class 1 blue/ white that requires 120' TTRA buffer. Stream 6 is a class II blue/white that requires a 120' TTRA buffer (BMP 12.6). Stream 7 is a class II orange/white AHMU that is a tributary to stream 6. Streams 2, 3, 5, and 8 are class III orange/white. Streams 9, 10, 11, and 12 are class III green/white. The class III orange/white streams require directional falling, and split yarding or full suspension over, and immediate removal of introduced logging debris (BMP 13.16). The class III green/white streams require directional falling, and split yarding (where practical) or partial over. These streams must be cleaned of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16, 12.6). Roads crossing blue/white streams will require fish passage and timing (BMP 14.14) A lot of blowdown and wet soils noted in unit.
M. Pacheco 7/20/95 B.Johnston, K.Buckley, R.Johnson, M.Solomon 6/21/96	WILDLIFE: This unit identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Four CMT's, (Culturally Modified Trees), found in the unit, 2 in live trees and 2 in snags. Deer browse and pellets seen in unit. Woodpecker species heard. Alder in overstory. Unit 679-502 is the helicopter portion of this unit.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: This unit was surveyed in 1996 to determine if historic materials associated with the Saco and Equator Prospects are located in or near the unit. No cultural materials were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Potential suspension required. Redo map drop portion in top. Dropped NE steep portion (presale check if helicopter option). Dropped scrub in center. Salvage windthrow patch in SE. Move unit to existing clearcut. Helicopter groups select up to 3/4 acre patches for unevenaged management. Around streams at south end. 3-4 patches. Regeneration harvest (cc) the remainder of the unit.

Chosina Study Area Interim Layout NOI Unit 679-382

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream

Class 2 Stream

Class 3 Stream

Existing Roads

Proposed Roads

Unit Boundary

Salt Water

Fresh Water Lakes

Estuary Buffers

500' Beach Buffer

No Cut Stream Buffers by Chantyp

Portiol Cut Stream Buffers by Chantyp

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

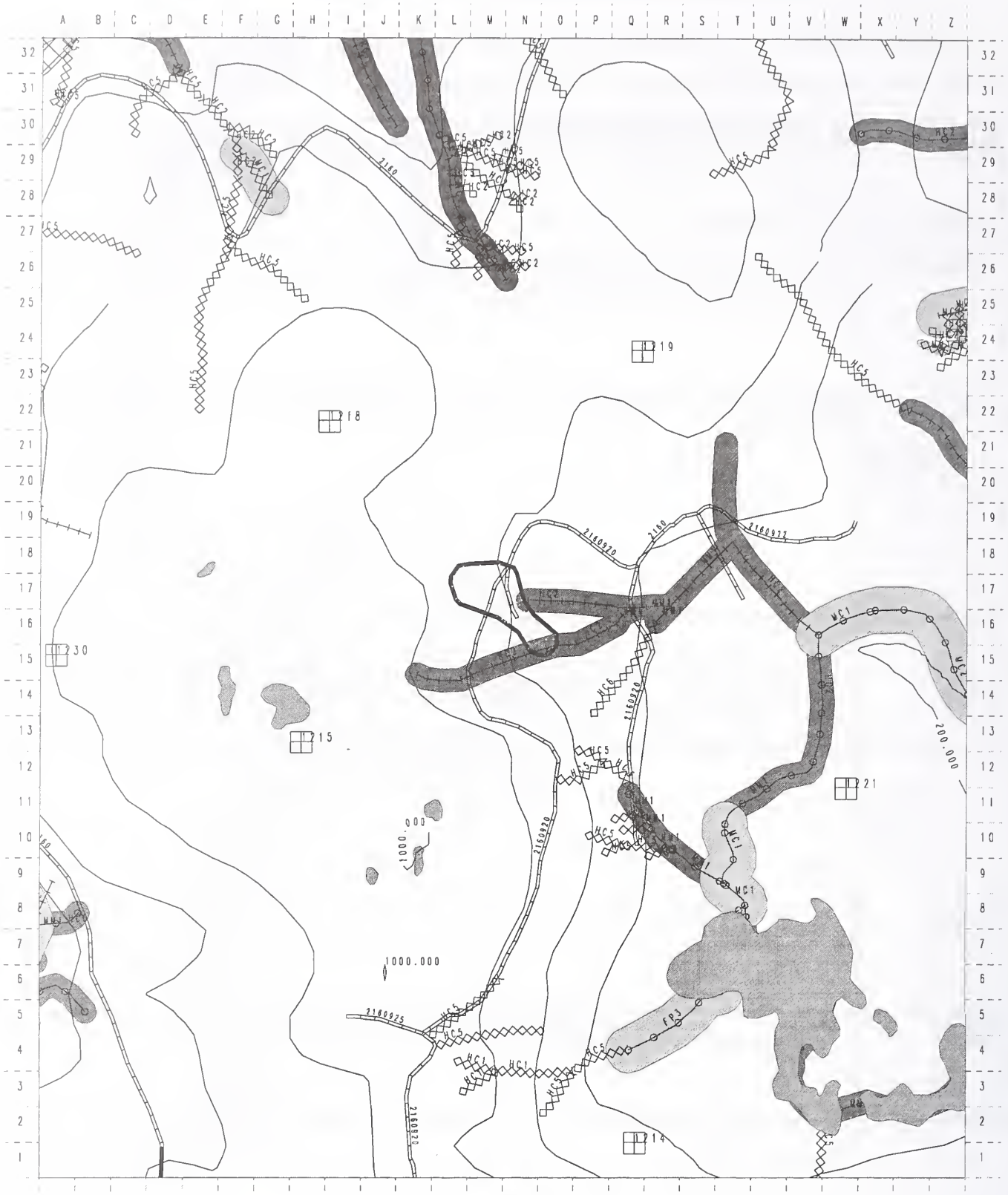
VCU-UNIT#: 679-383 ACRES: 9 VOL: 135 MBF ALTERNATIVES: 6

PHOTO YR/#: '71(51)-1472-45/'91-390-223 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67903- , high windthrow risk. Productivity of site is low. Uneconomic, low volume area surrounding. Maintain setting width between units, unless can be connected into one. Field checking alternative regeneration methods.
J. Oien 5/96	ROADS: No concerns.
R.Johnson. 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas 5-35%). Partial suspension forested wetland (BMPs 12.5, 13.9). Concerns whether adequate tail holds and anchors for guy lines for suspension. Probable stream(s) needing protection (BMP 13.16). Slight potential to expand. Third order watershed (BMP 12.1).
K.Buckley, 8/96	FISHERIES: GIS review shows potential for two class III orange/ white streams. Field verification will be required if unit is selected for harvest.
C. Tighe, B.Johnston, A.Mueller 6/14/96	WILDLIFE: This unit did not rate as a high priority area for wildlife because of its size of only 9 acres. It was not surveyed during 1995. Deer sign, browse, beds, and game trails seen in unit. Bear sign seen as well. One dead deer found in area. Fisheries crew reported seeing a mouse-like mammal along the creek. Sparse/scrub timber. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 679-383

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1998

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

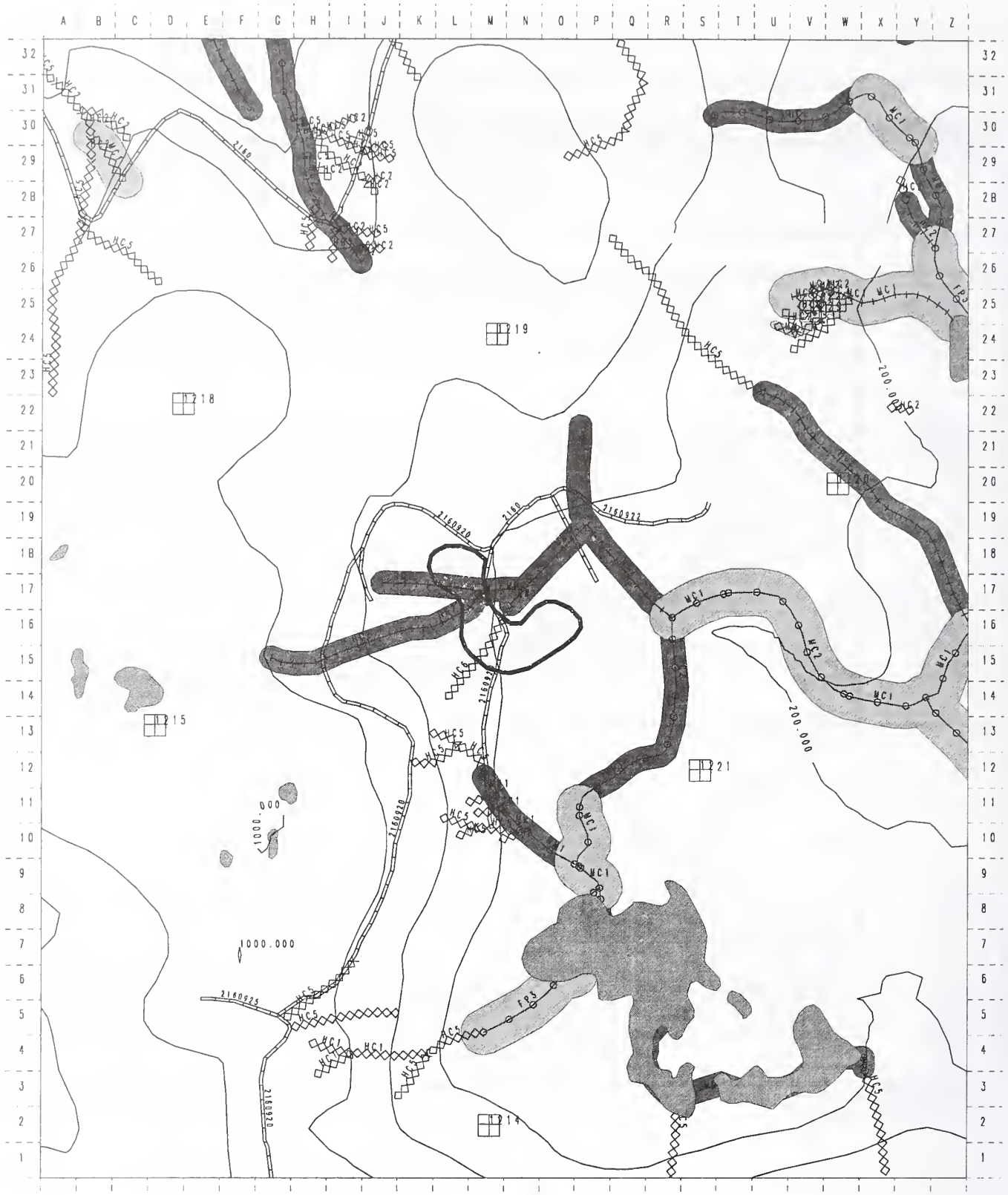
VCU-UNIT#: 679-384 ACRES: 17 VOL: 255 MBF ALTERNATIVES: 6

PHOTO YR/#: '71(51)/1472-45/'91-390-224 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS/SH

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67903- , low windthrow risk, partial downhill yarded. Productivity of site is low. Maintain setting width between units. Partial cut buffer. Uneconomic, low volume area surrounding. Depending on final road location - may want to drop portion north of northernmost creek. Shovel yard southern 1/2.
J. Oien 5/96	ROADS: No concerns.
R. Johnson. 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%) and 86CD (Kaikli - Grindall 5-60%). Partial suspension for forested wetlands (BMP 12.5, 13.9). Concerns adequate tail holds and anchors for guy lines for suspension. Potential to expand to limits of merchantable timber. Protection streams designated by fisheries; question B&W and O&W on these slopes, plus potential for blowdown of buffers. Third order watershed (BMP 12.1). Shovel yarding must meet standards of slopes, drainages, topography, walking on waste wood to protect wetland soils, etc., per BMP 13.9. Defer harvest on Kaikli soils (TLMP 1996).
K. McCartney, J. Frank, 8/1/95 K.McCartney, S.Deck, K.Kitchel, 6/14/96	FISHERIES: Stream 1 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Above the confluence with stream 3, stream 1 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). Above the confluence with stream 4, stream 1 is a class III orange/ white that requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 4 is a class IV green/ white. The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16). Road crossing stream 1 will require fish passage and timing (BMP 14.14).
C.Tighe, B.Johnston, A.Mueller 6/14/96	WILDLIFE: This unit did not rate as a high priority area for wildlife due to its low volume class. It was not surveyed during 1995. Deer and bear sign seen in unit: scat, pellets, beds, and trails. One dead deer found near unit. Fisheries crew reported seeing a mouse-like mammal in the area. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.
.	VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required. Shovel yard eastern 1/2. North end of unit maybe effected by buffer.

Chosino Study Area Interim Layout NOI Unit 679-384

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

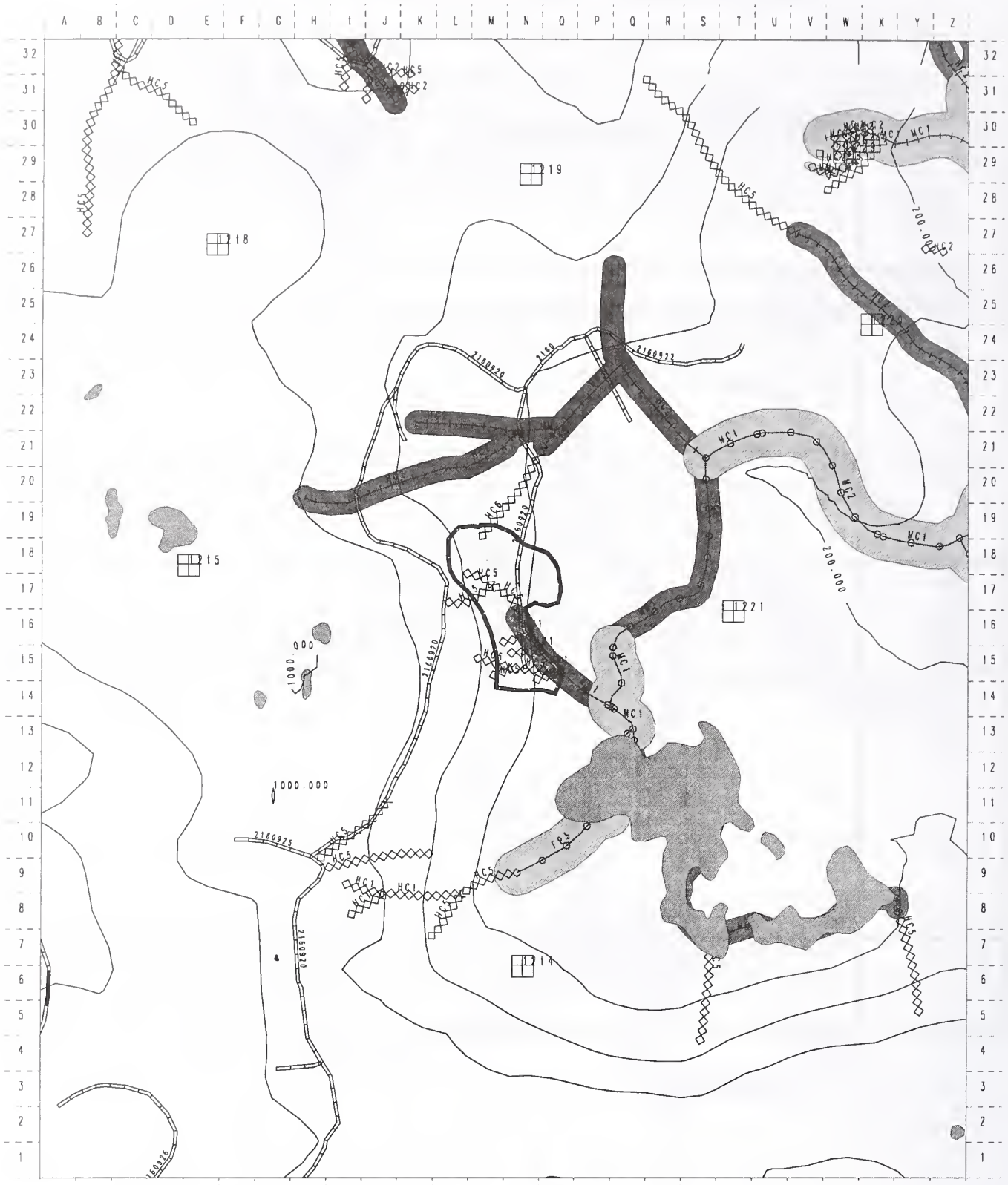
VCU-UNIT#: 679-386 ACRES: 22 VOL: 450 MBF ALTERNATIVES: 6

PHOTO YR/#: '71(51)-1472-45/'91-390-224 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67903- , high windthrow risk, portion downhill yarded. Productivity of site is moderate. Partial cut buffer. Maintain setting width between units, or join with unit 384. Uneconomic, low volume area surrounding. Adjust road upslope as far as possible. May have to drop steep center and area to the west above it. Reach up to NW as far as possible. Optional western road coming from the south may replace eastern bottom road. Maintain YC component by planting. Commercial thin if uphill.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%), with 86CD (Kaikli - Grindall 5-60%). Steeper slopes and McGilvery noted by silviculture. Partial suspension forested wetlands and McGilvery (BMPs 12.5, 13.9; TLMP 1991). Concerns adequate tail holds and anchors for guy lines for suspension. Better timber to NW may be limited by reach from road. May need to extend roading to S because curve of hill slope. Protect streams per fisheries (BMPs 13.16, 12.6a). Third order watershed (BMP 12.1). Defer harvest on Kaikli soils (TLMP 1996).
K. McCartney, J. Hannon, 8/1/95	FISHERIES: Streams 1 and 2 are class I blue/white TTRA. They require 120' TTRA buffers and road crossing timing (BMP 12.6, 14.14). Streams 6 and 7 are class III orange/whites that require directional falling, and split yarding or full suspension over, and immediate removal of introduced logging debris (BMP 13.16). Streams 3, 4, 5, 8, and 9 are class III green/white. They require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced logging debris before the end of the operating period or before the yarder leaves the operating area (BMP 13.16, 12.6a).
C.Tighe, B.Johnston, A.Mueller 6/14/96	WILDLIFE: This unit did not rate as a high priority for wildlife due to its low volume class. It was not surveyed in 1995. Deer and bear sign seen in unit: trails, scat, pellets, beds. One dead deer found near unit. Fisheries crew reported seeing a mouse-like mammal in the area. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 679-386

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portiol Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-392 ACRES: 50 VOL: 2250 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '71(51)-1472-44 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS, SL, SH

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , low windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is high. Field checking alternative regeneration methods. Wildlife corridor structure maintained by unevenaged mgmt. Strip cuts running SW - NE perpendicular to contours would have little impact on visuals. Eastern 1/2 of clear-cut will be adjacent in with private cut.
J. Oien 5/96	ROADS: No concerns.
R. Johnson, 6/96	SOILS/WATERSHED: Soils mapped primarily 3D (Vixen - Traitors 35-60%), with 550 C (StNicholas - Kaikli 5-35%) and 4D (Helm 35-60%) N end, and 28 (McGilvery & Tolstoi 5-60%) S end. Appears from photos more wet than mapped. N boundary may be limit merchantable timber, S boundary open. Partial suspension on wetlands (BMPs 12.5, 13.9). Potential expand down slope to E with spur road. Probable streams needing protection (BMP 13.16). E half in third order watershed (BMP 12.1). Shovel yarding per requirments BMP 13.9: slope, topography, walking on wood or pads, crossing streams, felling, spur roads, and turns.
J. Frank, M. Pacheco, D. Kennemore 7/25/95	FISHERIES: Stream 1 is a class III orange/ white. Stream 2 is a class III orange/ white. Stream 3 is a class III orange/ white. Stream 4 is a class III orange/ white. Stream 5 is a class III green/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The class III green/ white stream requires directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Pacheco, J.Baichtal 7/25/95 C.Tighe, A.Mueller 6/20/96	WILDLIFE: Game trails common. Wolf howls heard. Karst in area. To provide for adequate snag density and distribution within the VCU, recommend leaving 0.1 acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/20/96 Deer sign, pellets: beds, browse and trails seen in unit. Karst in unit. Blueberry very heavily browsed.
T.Fifield 10.28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Unevenaged Mgmt: for regeneration and structure retention. Strip/corridor selection - cable selections. Partial suspension required forested wetlands and McGilvery. Shovel yarding per requirments BMP 13.9. "Unit dropped from the preferred alternative due to proportionality based on acres." Type A clearcut.

Chosino Study Area Interim Layout NOI Unit 679-392

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-403 ACRES: 71 VOL: 3195 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '71(51)-1472-43 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , low windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is high. Greenup of adjacent unit should be attained by harvest. Unevenaged mgmt. Could retain wildlife structure for corridor. Field checking alternative regeneration methods.
J. Oien 5/96	ROADS: No concerns.
R. Johnson, 6/96	SOILS/WATERSHED: Soils mapped 3D (Vixen - Traitors 35-60%). No concerns apparent. Marble karst reported, partial suspension if so (BMPs 13.9, 13.16). Potential to expand unit with adequate roading to reach areas.
K. McCartney, J. Frank, D. Kuntzsch 7/24/95	FISHERIES: No streams in this unit. Unit contains Karst.
M.Pacheco, J.Baichtal 7/25/95 C.Tighe, A.Mueller, 6/20/96	WILDLIFE: Game trails in unit. Karst. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/20/96 Deer beds, pellets, trails and browse seen in unit. Blueberry very heavily browsed.
J. Baichtal 10/22/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Unit underlain by marble. Sinkholes numerous, none holding water. Even though sinkhole development is widespread and epikarst is moderately well developed, soils tend to be moderately deep, weathered, yellowish-brown silts. Soils seem to be developed as a result of mineralization which has weathered. These deep soils seem prone to windthrow. Based on sinkhole densities unit should be high vulnerability. Based on soil / epikarst development unit should be of moderate vulnerability. Because of the lack of discrete karst features taking water, the lack of caves, and the soil development and depth, the unit is proposed for harvest. Partial suspension required within unit as a minimum. Yarding should be perpendicular to the karst ridges when ever possible. Because of the broken nature of the ground, more temporary spurs may be needed to log the unit. It can be expected that 10-20% of the acres of harvest proposed will be deleted to protect discrete karst features. Mitigation to protect such features should be designed during final layout to insure windfirmness of buffers. Unit design should consider windthrow potential. Suggest adopting proposal to access unit by spurring in from the north and south instead of building road through unit. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Strip/corridor selection - cable selections. "Unit dropped from the prefered alternative due to proportionality based on acres." Use type B clearcut.

Chasina Study Area Interim Layout NOI Unit 679-403

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portiol Cut Stream Buffers by Chantyp

Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

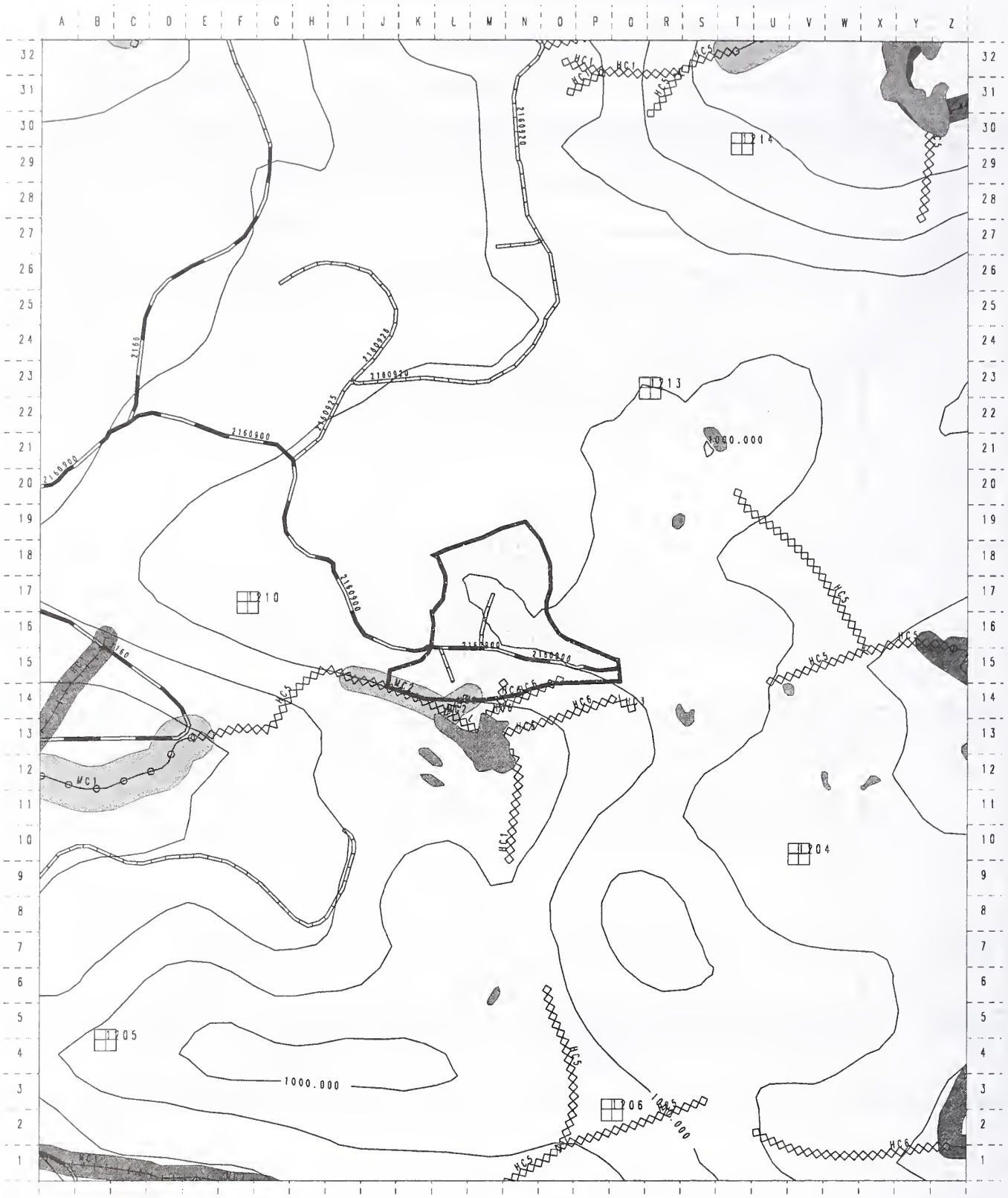
VCU-UNIT#: 679-407 ACRES: 43 VOL: 1131 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '71(51)-1472-43/'91-390-163 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windrows risk. Unit changed maybe to provide proportionality of volume classes. Productivity of site is high. Partial cut buffer. Uneconomic, low volume area, to the south and SE. Unit design calls for clear-cut regeneration method. Verify roads and/or landing locations. Karst also in uneconomical area and in unit.
J. Oien 5/96	ROADS: No concerns.
R. Johnson, 6/96	SOILS/WATERSHED: Soils mapped 3D (Vixen - Traitors 35-60%) N half, 442 C (Ulloa - Sarkar 5-35%) S half. Partial suspension on believed moderate vulnerability karst, no shovel logging. Deletions made by silviculture beneficial.
H. Roerick, K. McCartney, K. Buckley, 7/19/95 K.Kitchel, M. Solomon, S. Deck, 6/27/96	FISHERIES: Stream 1 is a class III orange/ white that requires a slope break plus 25' buffer (BMP 13.16). Stream 2 is a class IV green/ white. Stream 3 is a III orange/ white that requires a slope break plus 25' buffer (BMP 13.16). The class IV green/ white stream requires directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
M.Dillman, J.Wrate 7/12/95 C.Tighe, B.Johnston, A.Mueller 5/17-18/96 T.Belfield 7/96	WILDLIFE: Deer sign seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/17-18/96 Karst and deep sinkholes in unit. Deer sign seen throughout. Fresh beaver activity in lake to south of the unit. Flying squirrel traps were set in this unit on 7/13/96. We were unsuccessful in catching any squirrels. This unit was surveyed by a botanist for sensitive plants. Platanthera chorisiana , (choris bog orchid), found in the vicinity of the unit..
J.Baichtal 5/15/96 10/22/96	GEOLOGY/MINERALS: No mineral concerns, access for harvest will improve mineral exploration access. Unit is underlain by marble. Below the road are deep sinkholes and insurgences, resurgences feeding into small lake, one small cave, and extremely steep cliff faces. Above the road epikarst is extremely well developed. Thin soil atop epikarst ridges, moderately deep soil in epikarst channels. Huge (greater than 100 feet dia.) sinkholes / insurgences along northeastern corner of unit. Only the northwest corner of the unit is moderate vulnerability karst, the rest of the unit is high vulnerability karst. Based on this, nearly all of the unit should be excluded from harvest as per the standards and guidelines outlined in the RSDEIS for the TLMP. 10/96 reviewed unit to check earlier prescription. No changes. From a karst perspective, the majority of the unit would be classified as high vulnerability and should be deleted from proposed harvest. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Minimum partial suspension. May be deleted. "Unit dropped from the prefered alternative due to proportionality based on acres.

Chasina Study Area Interim Layout NOI Unit 679-407

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

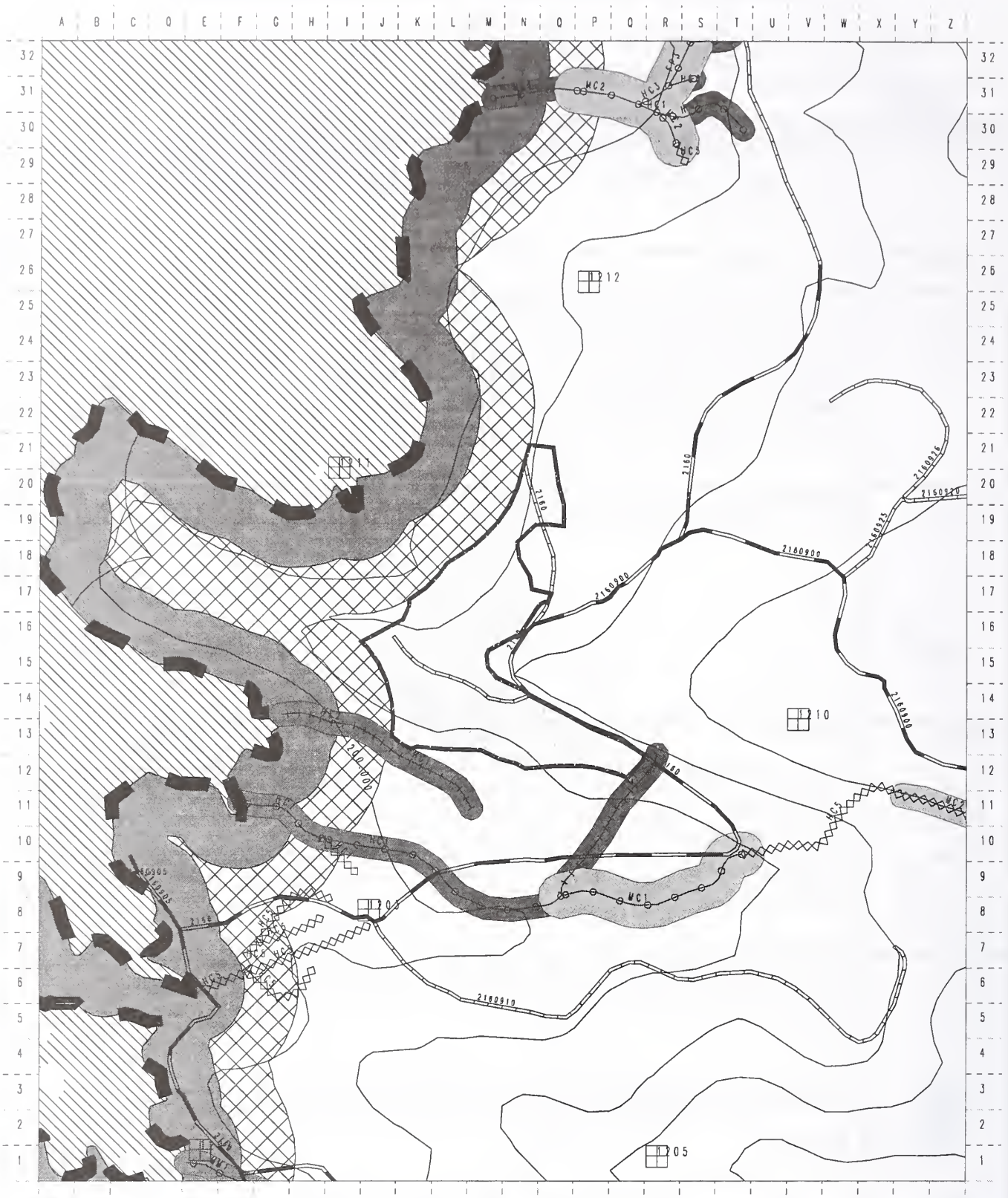
VCU-UNIT#: 679-409 ACRES: 66 VOL: 1607 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '71(51)-1472-43 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: LS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G. Lawton 5/96	SILVICULTURE/TIMBER: 67902-128, high windthrow risk, portion downhill yarded. Unit changed to provide proportionality of volume classes. Retain stand structure for wildlife where feasible. Productivity of site is moderate. Adjacent to previous cut. Should meet greenup requirements. May be impacted by recent salvage sale. Partial cut buffer. Stay out of estuary buffer. High mistletoe cantent.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr 10/13/95 EIS R.Johnson	SOILS/WATERSHED: Soils StNicholas, Sarkar, and McGilvery. Slopes 20-110%. Deleted 2 A MMI 4 on west boundary (BMP 13.5) and salvage sale on east. Still small areas MMI 4 on south side of ridge on slopes greater than 100%. High MMI soils on the north and south facing slopes. Karst features on top and north side of ridge. About 17 acres on slopes greater than 75%. A minimum of partial suspension is required throughout the unit (BMP 13.9). Full suspension is desirable on south facing slope in the southwest portion of the unit but not required to meet standards. A small stream at the east unit boundary requires G&W protection (BMP 13.16). A larger stream along the south unit boundary should have O&W protection if the stream is not fish habitat. Two streams on the north side of the ridge require protection. The larger stream should be designated O&W and the smaller stream G&W. Potential for blowdown, especially on Karst. Planned road top of ridge appears feasible (BMP 14.2). Additional road may be required access both sides of ridge, and provide split yarding on O&W creeks (BMP 13.16).
M. Solomon, K. Kitchel, 7/13/96	FISHERIES: Stream 1 is a class III orange/ white that requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). Stream 2 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6).
M.Pacheco, J.Baichtal 7/26/95 D.Parker, M.Pacheco, B.Johnston 8/16/95 M.Dillman, A. Mueller, 6/1/96 B.Johnston, A. Mueller 6/6/96 T.Belfield 7/96	WILDLIFE: Deer signs and game trails in area. Wolf killed deer found. Also marbled murrelet eggshell fragments were found near the units western boundary. Karst throughout unit. Unit identified as important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Unit is within a half mile of known bald eagle nest. Road construction must be accomplished in accordance with the requirements of the Bald Eagle Protection Act and written coordination with the U.S. Fish and Wildlife Service must be documented. Any road construction must also comply with the MOU between the U.S. Fish and Wildlife Service and the U.S. Forest Service. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. A marbled murrelet dusk and dawn survey was done from the Lancaster cabin. No birds were recorded. A sensitive plant survey was done by the botanist in this unit but no sensitive plants were found. Maintain 1000 foot estuary buffer.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Unit underlain by marble. Moderately well developed epikarst on top of ridge, thin shallow soils. Moderate vulnerability karst throughout unit. Partial suspension required within unit as a minimum. LANDS:
T. Fifield 5/96	CULTURAL: This unit was surveyed in 1996 to determine if historic materials associated with the Gladstone Prospect are located in or near the unit. No cultural materials were noted. There are no concerns with this unit as planned. VISUALS:
G.Lawton 5/96 D.J.L., R.J. 10/95	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. G&W streams: DF, SY (where practical), or partial over. Clean the stream of introduced debris before the end of the operating period or before the yarder leaves the area. O&W streams: DF, full over or SY. Clean the stream of introduced debris immediately. Minimum of partial suspension required. Full suspension south facing slope southwest portion of unit. "Unit dropped from the preferred alternative due to proportionality based on acres". Dropped 5 acres south side no tailholds (low volume).

Chasina Study Area Interim Layout NO1 Unit 679-409

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

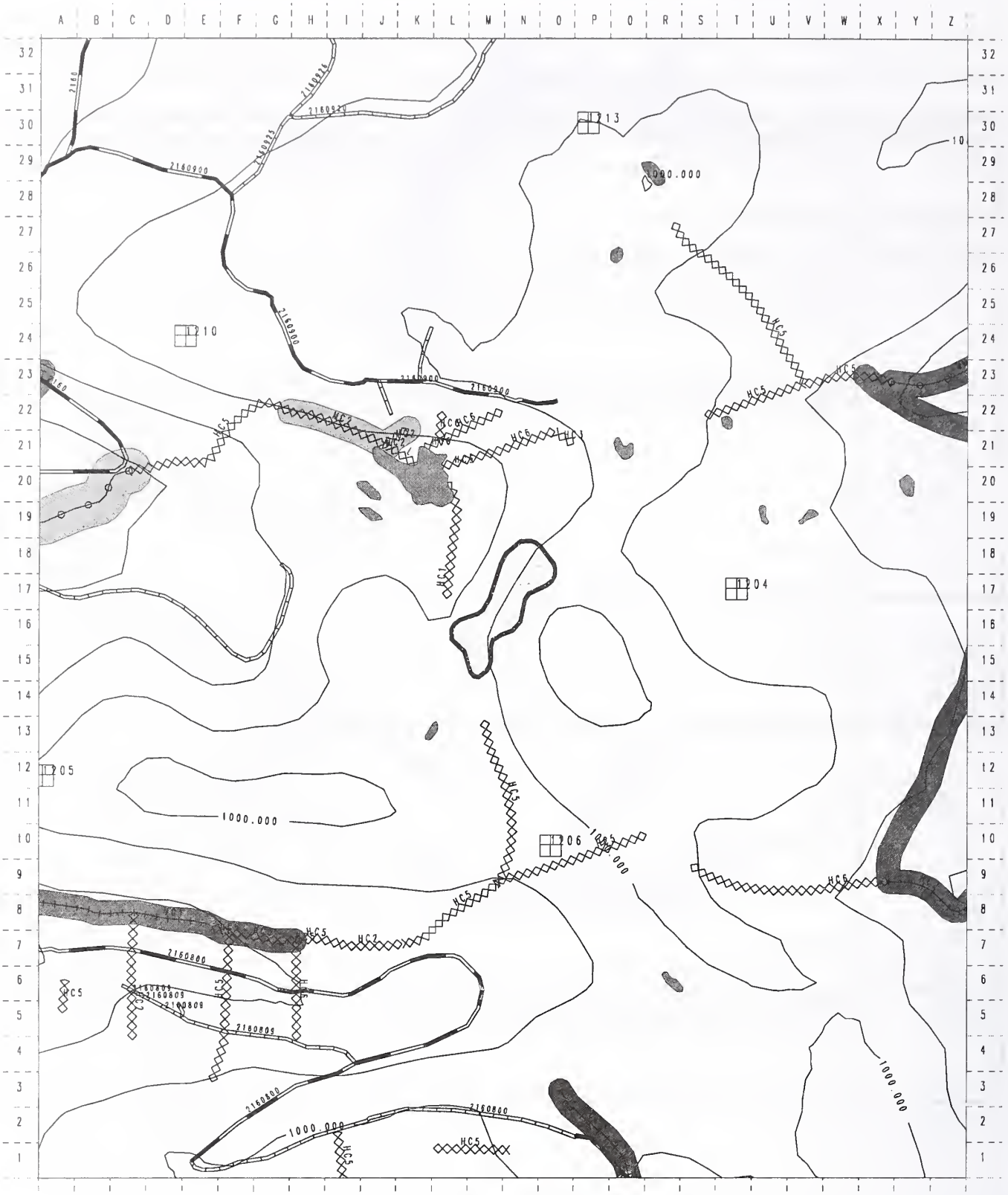
VCU-UNIT#: 679-413 ACRES: 11 VOL: 275 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '71(51)-1472-42/'91-390-163 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE /RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G. Lawton 6/96	SILVICULTURE/TIMBER: , low windthrow risk. Productivity of site is low. Uneconomic, low volume area surrounding. Field checking alternative regeneration methods.
J. Oien 5/96	ROADS: No concerns.
R. Johnson 6/96	SOILS/WATERSHED: Soils mapped primarily 74E (Kupreanof 60-75%), with 4D (Helm 35-60%) SE and 86CD (Kaikli - Grindall 5-60%) SW and W. Partial suspension for slopes and forested wetlands (FSM 2554; BMPs 12.5, 13.9). Helicopter prescribed. Probable delete low volume SE corner and W of creek SW and W side (BMP 12.5). Probable protection slope break buffer stream and V-notch SW corner, and protection along W side unit (BMP 13.16). Stream should be unit boundary.
K. McCartney, S. Deck, 7/12/96	FISHERIES: Stream 1 is a class III orange/ white that requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). Unit side slopes are steep and there are many pistol butted trees.
M.Pacheco 7/26/95 A.Mueller, B.Johnston 7/20/96	WILDLIFE: Deer and bear sign in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G. Lawton 6/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Helicopter yard using overstory removal with 18" diameter limit (all species).

Chosina Study Area Interim Layout NOI Unit 679-413

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

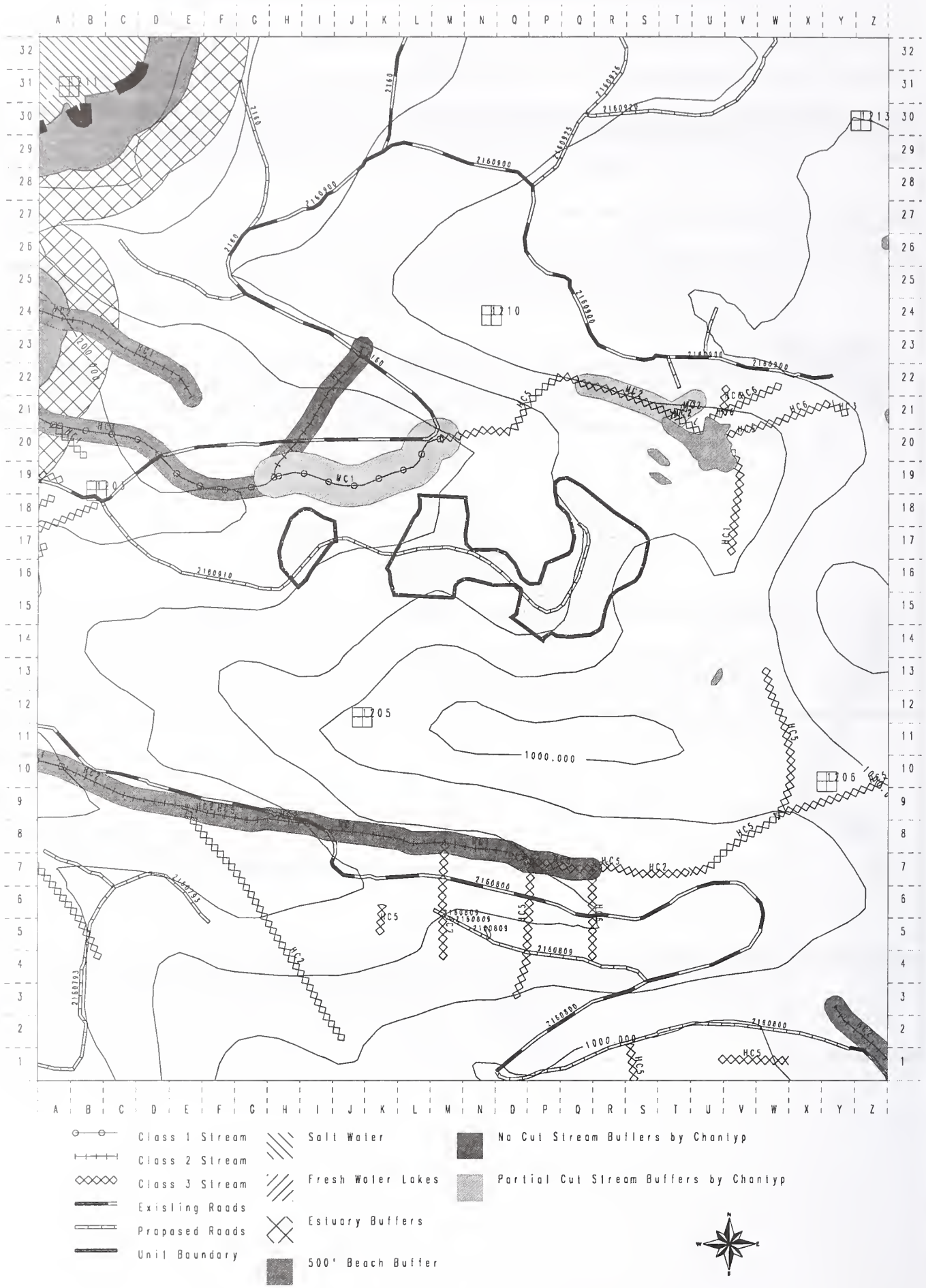
VCU-UNIT#: 679-414 ACRES: 52 VOL: 780 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '71(51)-1472-42/'91-390-163 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G. Lawton 6/96	SILVICULTURE/TIMBER: 67902-101, low windthrow risk, portion downhill yarded. Productivity of site is low. Uneconomic, low volume area to north and between western area settings. Downhill yarding shortens road (more feasible - slopes). Retain cedar component through planting and/or seed trees remaining.
J. Oien 5/96	ROADS: No concerns.
R. Johnson. 6/96	SOILS/WATERSHED: Soils mapped primarily 48C (Helm - Kitkun 5-35%) and 57D (Petrel 35-60%), with 3D (Vixon - Traitors 35-60%), 33D (StNicholas - McGilvery 35-60%), 32C (StNicholas 5-35%). Unit basically forested wetland. Minimum partial suspension for wetlands and inclusions, MMI3, and McGilvery (BMPs 12.5, 13.9; TLMP 1991). Unit includes muskeg areas, in addition to low volume areas already deleted, that should be avoided (BMP 12.5). Streams present, not designated yet, will need protection (BMP 13.16).
K. McCartney, S. Deck, 7/12/96	FISHERIES: Stream 1 is a class IV green/ white. Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 4 is a class IV green/ white. Stream 5 is a class III orange/ white that requires a slope break plus 25' buffer (BMP 13.16). Stream 6 is a class IV green/ white. The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Pacheco 6/28/95 M.Dillman, A. Mueller 5/31/96 T.Belfield 7/96	WILDLIFE: Game trails and bear scat seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/31/96 Deer sign seen in unit. This unit was surveyed by the botanist and sensitive plants (Platanthera chorisiana), choris bog-orchids, were found in the vicinity.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G. Lawton 6/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut, leave up to 20" DBH seed trees on edges of unit for cedar seed source. Minimum of partial suspension required. Protect muskeg areas included in unit.

Chasina Study Area Interim Layout NOI Unit 679-414

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Warfield on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

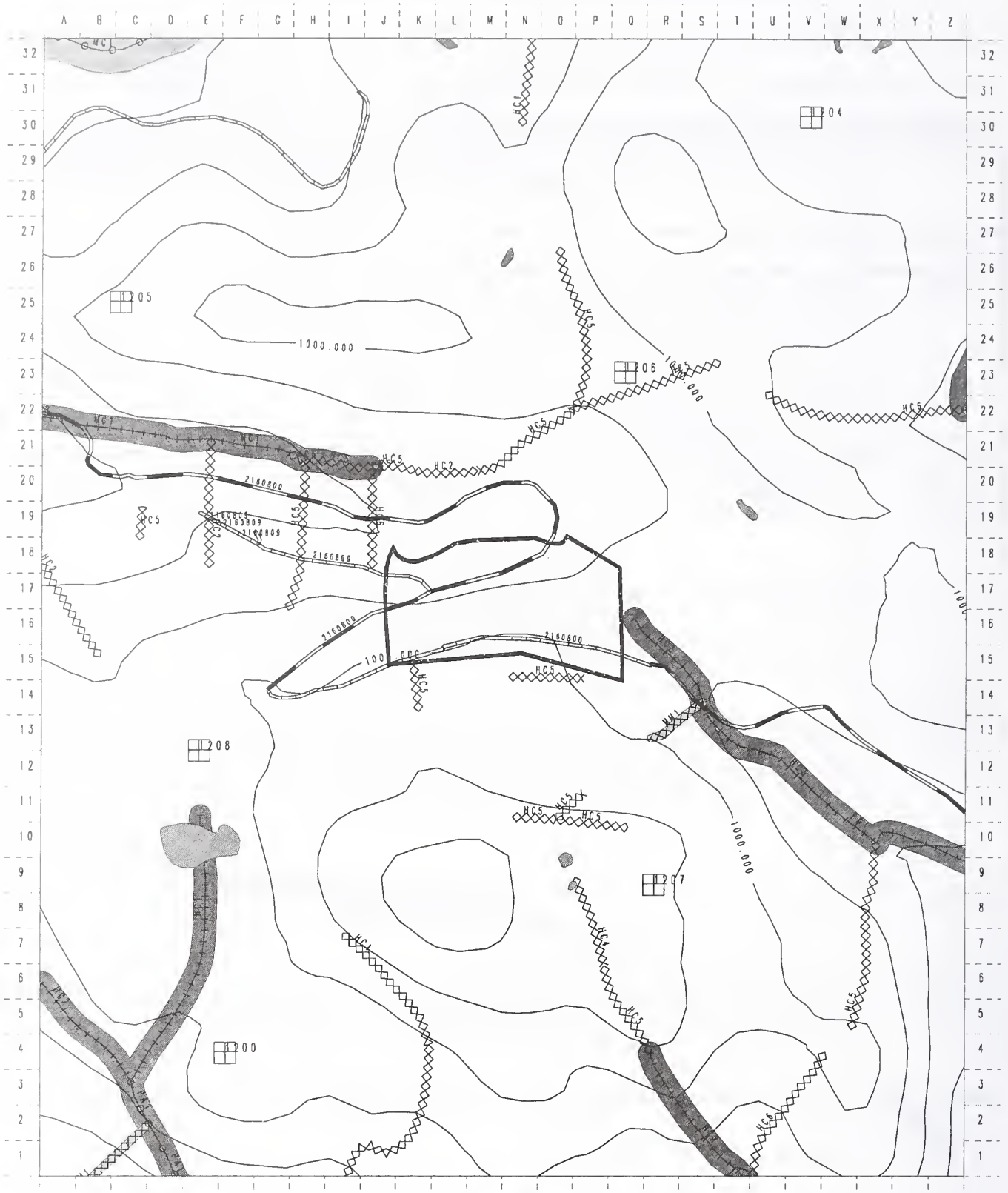
VCU-UNIT#: 679-420 ACRES: 53 VOL: 2650 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-164 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902- , high windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is high. Field checking alternative regeneration methods. Major karst fault to the south. Adjacent to native clear-cut. Unit design calls for clear-cut regeneration method. Verify roads and/or landing locations. Optional unevenaged mgmt.
J. Oien 5/96	ROADS: No concerns.
R. Johnson 6/15/95	SOILS/WATERSHED: Soils remaining unit mix Tolstoi, Traitors, Tokeen, Sarkar, Ulloa, McGilvery, Kitkun, Kaikli, StNicholas. Slopes up to and greater than 75%, though generally less than 55%. Partial suspension for mixed moderate vulnerability karst (BMP 13.9). Deleted from top of W to E ridge about 15-16 on unit card to proposed S boundary because blind lead top of ridge, high vulnerability karst primarily McGilvery beyond ridge, and MM14 forested wetland on steep lsopes upper backline (BMPs 12.5, 13.9, 13.5, 13.6; TLMP 1991). 2160 - 800 road needs to be moved N on W end avoid steep slopes (BMP 14.3). 2160-820 and -821 roads not feasible due topography and karst (BMP 14.2). Need to delete NW corner adjacent clear-cut due steep slopes, karst, McGilvery and resurgence (BMPs 13.9, 13.16; TLMP 1991). May affect route of 2160-810 road (BMP 14.2). Other resurgences N. boundary need protection (BMP 13.16). E half in third order watershed (BMP 12.1).
J. Frank, J. Baichtal, D. Kuntzsch, J. Wrate, 6/15/95	FISHERIES: Stream 1 is a class lll green/ white. Stream 2 is a class III green/ white. Stream 3 is a class lll green/ white. The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16). There are also karst resurgences below the proposed road that will need split yarding (BMP 13.16).
D.Parker, J.Wrate 6/15/95 C.Tighe, B.Johnston, A. Mueller 5/16/96	WILDLIFE: Deer browse, pellets, trails and beds seen throughout unit. Many karst features found. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Large diameter tall snags in unit- great wildlife trees.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Unit on interbedded marble and phyllite. Southern 2/3 of unit is high vulnerability karst based on epikarst development, frequency of large collapse features and insurgences. This portion of the unit was excluded from the unit as per the standards and guidelines outlined in the RSDEIS for the TLMP. The northern 1/3 of the unit in on moderate vulnerability karst with resurgences along the northern limit of the unit. Design the unit to exclude the resurgences and partially suspend logs on the remainder of the unit. LANDS:
T.Fifield 10/28/96	CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspenion required. Delete NW corner. "Unit dropped from the preferred alternative due to proportionality based on acres."

Chasina Study Area Interim Layout NOI Unit 679-420

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

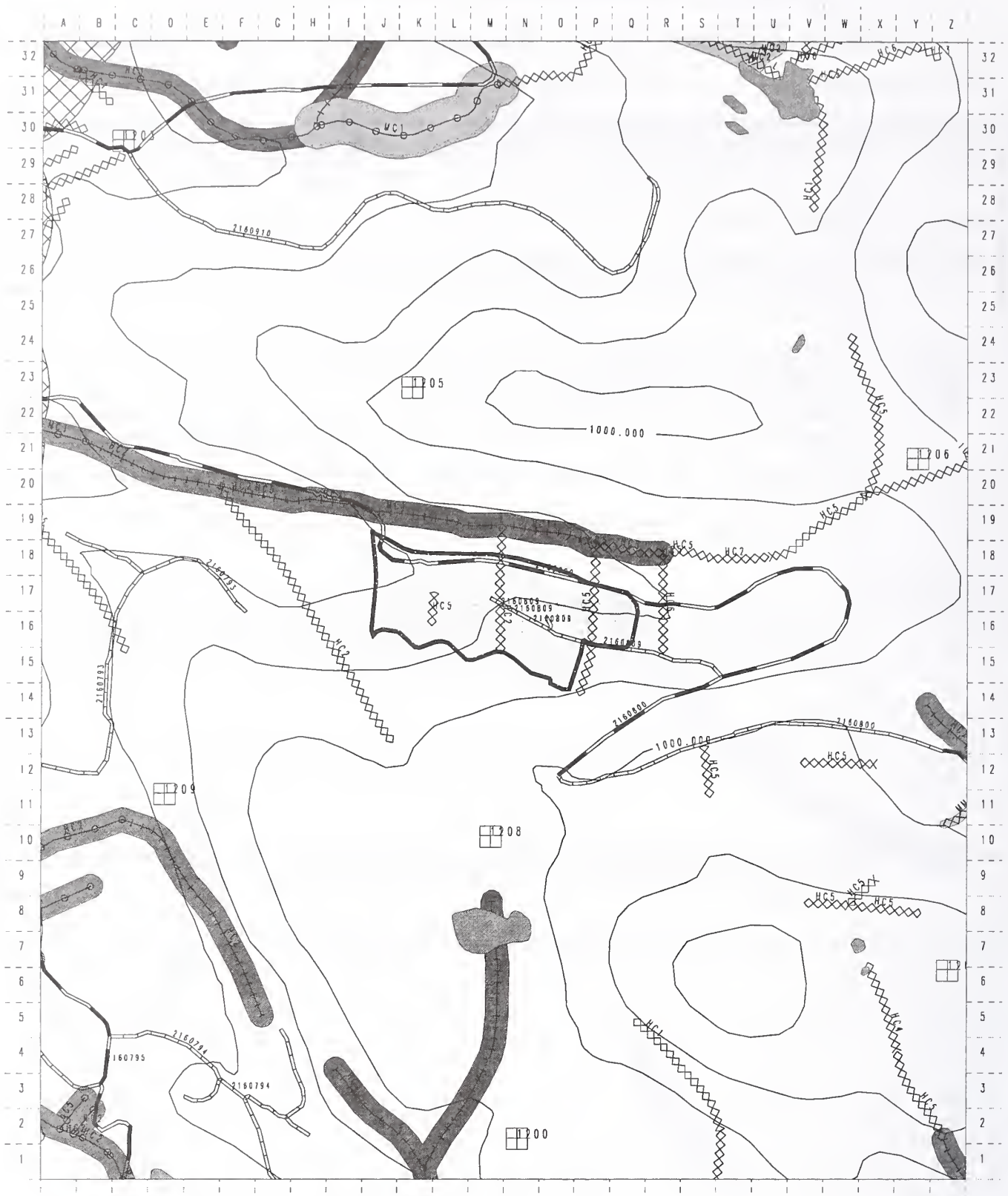
VCU-UNIT#: 679-422 ACRES: 47 VOL: 1880 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-163 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902- , high windthrow risk. Productivity of site is high. Split-yarding required on stream. Maintain setting width between units. Uneconomic, low volume area to south. Extend spur to western edge of unit for good suspension. Add eastern setting to stream.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/95	SOILS/WATERSHED: Soils mapped primarily 3D (Vixen - Traitors 35-60%), with 48C (Helm - Kitkun 5-35%) on S boundary. Karst reported in unit. Partial suspension for karst and forest wetlands (BMPs 12.5, 13.9), although wetlands appear open and low volume not suitable for harvest. Protect cave and streams per geology and fisheries (BMP 13.16).
M. Becker, K. McCartney, J. Frank, 6/15/95	FISHERIES: Stream 1 is a class III green/ white. Stream 2 is a class III orange/ white. Class 3 is a class III orange/ white that requires a slope break plus 25' buffer (BMP 13.16). The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced immediately (BMP 13.16). The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16). Recommend keeping unit boundary above road (BMP 12.6, 13.16).
D.Parker, C.Tighe, J.Wrate 6/15/95 C.Tighe, B.Johnston, A. Mueller 5/16/96	WILDLIFE: Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Orange and pink mining flagging and stakes with yellow and pink flagging seen throughout unit.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Unit is underlain by interbedded phyllite and marble. Unit is on moderated vulnerability karst except for cave system located in western 1/3 of unit. A 100 foot no harvest buffer is required around the cave and stream feeding into cave as per the standards and guidelines outlined in the RSDEIS for the TLMP. Partial suspension required on remainder of unit. LANDS:
T.Fifield 10/28/96	CULTURAL: This unit was surveyed in 1996. No cultural materials were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 679-422

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W
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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-425 ACRES: 42 VOL: 1166 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-390-163 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902- , high windthrow risk, portion downhill yarded. Retain stand structure for wildlife where feasible. Eliminate cut in various buffers. Field checking alternative regeneration methods. Maintain setting width between units. Productivity of site is low. Check option of unevenaged mgmt / OSR. East side deffered for wildlife corridor and watershed concerns.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/95	SOILS/WATERSHED: Soils mapped 3D (Vixen - Traitors 35-60%) N 2/3; 32C (StNicholas - McGilvery 5-35%), 442D (Ulloa-Sarkar 35-60%), and 13 (SaltChuck 0-10%) S 1/3. Partial suspension forested wetlands, McGilvery, karst (BMPs 12.5, 13.9). Stream and V-notch N boundary probable slope break buffer (BMP 12.6a). Protection of streams per fisheries (BMPs 13.16). 2160-790 road not viable as shown unit card. Needs to be on top of ridge to access timber N end of unit (BMP 14.2).
D.Kuntzsch, K.Buckley, K.Kitchel, S.Deck, K.McCartney, 6/1/96	FISHERIES: Stream 1 is a class II blue/white TTRA that flows along the north boundary of the unit; it requires a slope break plus 100' buffer (BMP 12.6). Stream 3 is a class II blue/white TTRA that flows into stream 1 and it requires a 100' TTRA buffer (BMP 12.6). This stream turns into a class III orange/white (refer to map). Below the unit boundary, stream 2 is a class I that turns into a class II blue/white. Approximately at the west unit boundary, stream 2 becomes a class III orange/white system. There is a patch of blowdown in the headwaters of this stream (near the south unit boundary). Stream 4 is a tributary to stream 2 and is a class III orange/white; in its upper section, it becomes a class IV green/white. The orange/white streams require directional falling, and split yarding or full suspension, and immediate removal of introduced logging debris (BMP 13.16). The green/white streams require directional falling, and split yarding (where practical) or partial suspension. Clean these streams before the end of the operating period or before the yarder leaves the area (BMP 13.16, 12.6a). Northwest corner of unit is impacted by 1000' estuary buffer.
M.Dillman, J.Wrate 7/12/95 C.Tighe, B.Johnston, A. Mueller 5/16-17/96	WILDLIFE: Deer sign seen in unit. Unit identified as an important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Two different trap lines were set up this unit to catch Prince of Wales flying squirrels. We were unsuccessful. Maintain 1000 foot estuary buffer.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Soils reported moderate vulnerability karst along southern unit boundary. Partial suspension required over top of karst. LANDS:
T.Fifield 10/28/96	CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension required. Stay off of steep slopes to the west. Defer eastern 1/2 of unit to mitigate watershed effects. Stay out of V-notch lip to the north.

Chassina Study Area Interim Layout NOI Unit 679-425

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

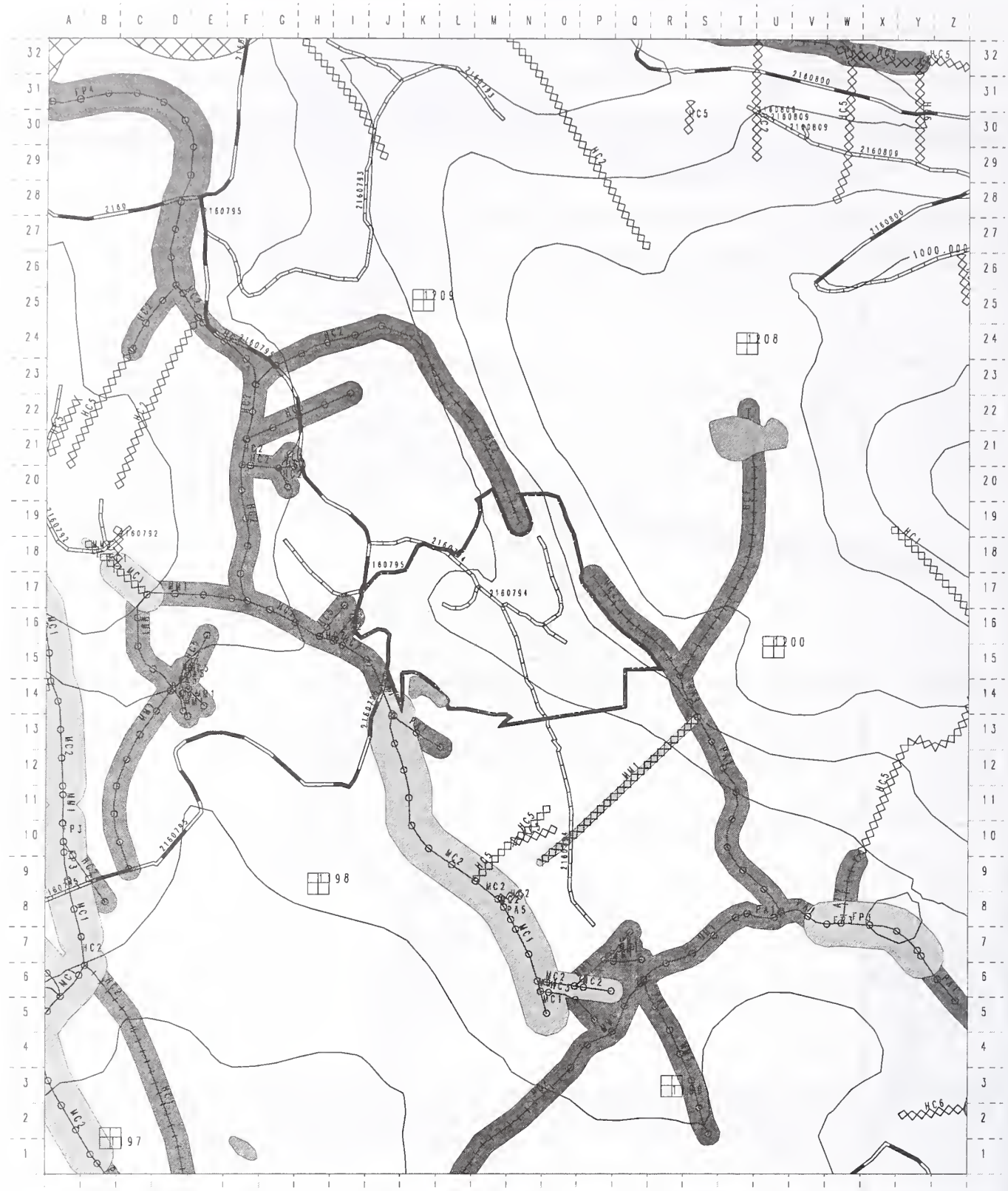
VCU-UNIT#: 679-433 ACRES: 81 VOL: 2133 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-165 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: RS, SH

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902-83, low windthrow risk. Productivity of site is high. Partial cut buffer. Field checking alternative regeneration methods. Maintain setting width between units.
J. Oien 5/96	ROADS: Evaluate temporary roads for specified road criteria.
R. Johnson 6/95	SOILS/WATERSHED: Soils mapped primarily 1C (Vixen 5-35%), with 550C (StNicholas - Kaikli 5-35%), 442D (Ulloa - Sarkar 35-60%), 4C (Helm 5-35%). Partial suspension of wetlands and karst (BMPs 12.5, 13.9). Probable adjustments boundaries due low volume wetlands particularly on E and S. Probable cliffs in NW corner need protection. Probable protection pond SW corner and streams in unit (BMPs 12.6, 12.6a, 13.16). E third in third order watershed (BMP 12.1).
K. Buckley, K. McCartney, M. Solomon, D. Kuntzsch, S. Deck, K. Kitchel, 6/7/96	FISHERIES: Stream 1 is a class II blue/ white that requires a 200' TTRA buffer (BMP 12.6). Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 5 is a class III orange/ white. Stream 6 is a class IV green/ white. Stream 7 is a class IV green/ white. Stream 8 is a class IV green/ white. Stream 9 is a class III orange/ white. Stream 10 is a class IV green/ white. Stream 11 is a class III orange/ white. Stream 12 is a class IV green/ white. Stream 13 is a class IV green/ white. The class III orange/ white streams require directional falling and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The class IV green/ white streams require directional falling and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
M.Dillman, J.Wrate 7/13/95 C.Tighe, B.Johnston, A.Mueller 6/15/96	WILDLIFE: Game trails, beaver ponds with beaver seen at lake on units southern boundary. Common mergansers on lake. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/15/96 This unit has many game trails, deer pellets and beds. Blueberry and skunk cabbage have been browsed. Some bear sign in unit.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required. Drop two acres in center due to unsuitable, uneconomical timber. Shovel yard flat portions where possible.

Chasina Study Area Interim Layout NOI Unit 679-433

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portiol Cut Stream Buffers by Chantyp

N
W E
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Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

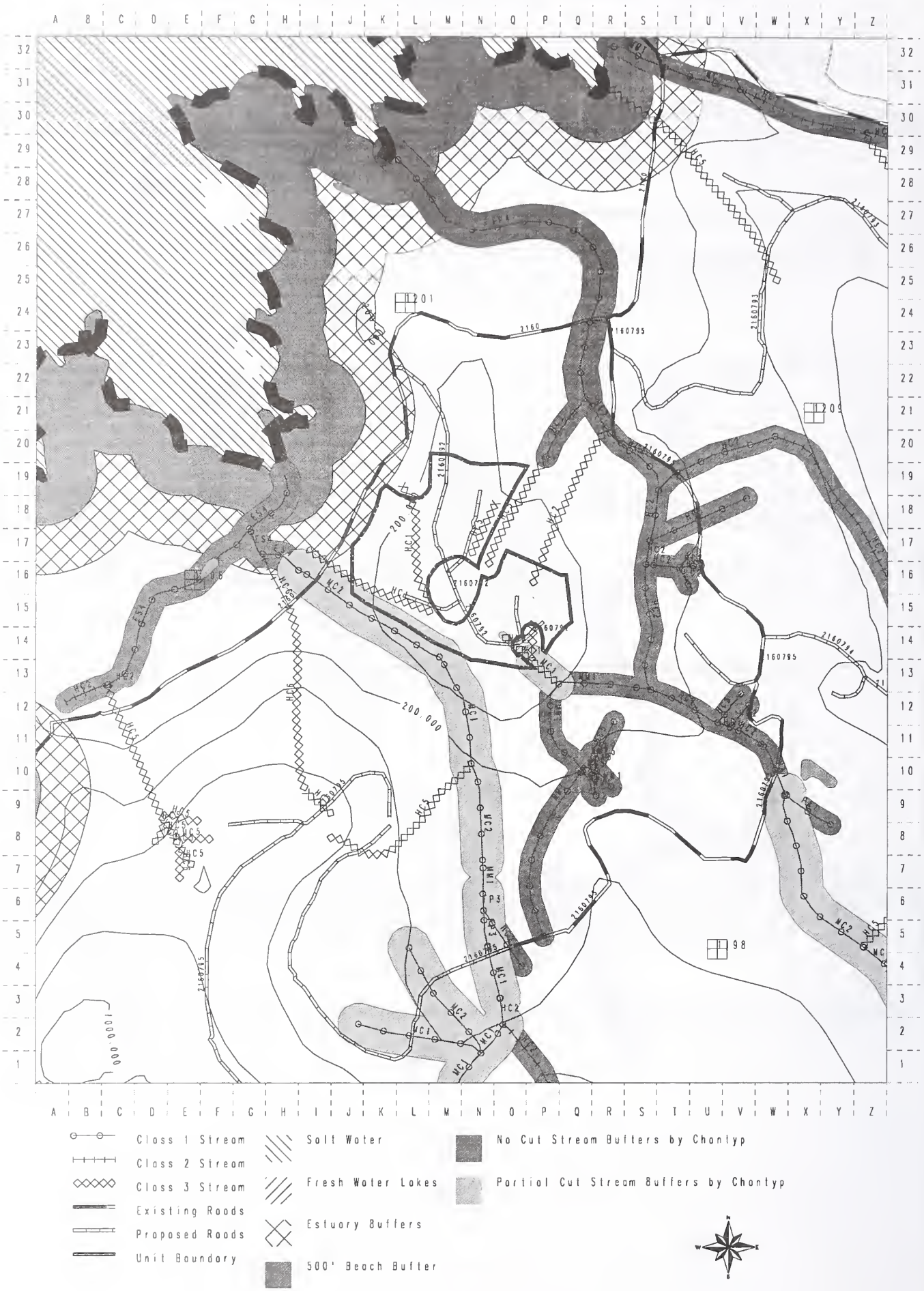
VCU-UNIT#: 679-437 ACRES: 58 VOL: 1198 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-145 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS, SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902-39, low windthrow risk. Retain stand structure for wildlife where feasible. Productivity of site is moderate. Partial cut buffer. Maintain setting width between units. Complex streams and protection thereof. Option: un-evenaged mgmt. High mistletoe defect.
J. Oien 5/96	ROADS: No concems.
R. Johnson. 6/95	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%), 62 (Karheen - McGilvery 0-70%), 1C (Vixen 5-35%), 32C (StNicholas 5-35%). Karst reported W side. Partial suspension primarily forested wetlands with McGilvery and karst (BMPs 12.5, 13.9; TLMP 1991). Streams protected see fisheries (BMPs 12.6a, 13.16). Potential to expand unit to SE, E, and N. Defer harvest on Kaikli and Karheen (TLMP 1996).
D. Kuntzsch, K. Buckley, J. Frank, C. Tighe, K. McCartney, 7/25/95 and 7/26/95	FISHERIES: Stream 1 is a class I blue/ white that requires a 200' TTRA buffer due to it's deep V notch channel (BMP 12.6). Stream 2 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 is a class III green/ white. Stream 4 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 4 changes to class III orange/ white at 200' of elevation. Stream 5 is a class III orange/ white that flows into a karst sink hole. Stream 6 is a class III orange/ white. Stream 7 is of no concern. Stream 8 is a class III green/ white. Stream 9 is of no concern. Stream 10 is a class III green/ white. Some Karst features present in unit, including sink holes. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
C.Tighe 7/25/95 D.Parker, M.Pacheco, B.Johnston 8/4/95 C.Tighe, B.Johnston, A. Mueller 6/12/96	WILDLIFE: Deer and bear sign seen in unit. Unit identified as important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Doe seen near unit 6/12/96. Maintain 1000 foot estuary buffer.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Loosing karst stream into large karst collapse along northern unit boundary. Minimum 100 foot no harvest buffer along stream deleting this feature from the unit. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. See write up PC 1/4 of unit CC 3/4 dropped 5Ac. scrub. Partial suspension required. Dropped 5 acres of scrub in NE corner. Most of unit that in uphill yarded will be unevenaged - groups selected with corrider/strip openings. Retain 75% of volume between corridors.

Chasino Study Area Interim Layout NOI Unit 679-437

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-441 ACRES: 26 VOL: 750 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-165 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS, HE, SH

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902- , low windthrow risk. Productivity of site is moderate. Partial cut buffer. Field checking alternative regeneration methods.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped primarily 1D (Vixen 35-60%). No concerns apparent (BMP 13.9). 48C (Helms -Kitkun 5-35%) in SE corner appears low volume wetland, has been deleted (BMP 12.5). Potential to expand to SW probably not feasible if class I stream continues. Streams by fisheries (BMPs I2.6a, I3.I6). Part in third order watershed (BMP 12.1).
D. Kuntzsch, J. Frank, K. McCartney, 8/2/95	FISHERIES: Stream 1 is a class III green/ white. Stream 2 is of no concern. Stream 3 is a class III green/ white. Stream 4 is a class I blue/ white that requires a 120' TTRA buffer (BMP I2.6). Stream 5 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 6 is a class I blue/ white that requires a 120' TTRA buffer (BMP I2.6). Stream 7 is a class I blue/ white that requires a I00' TTRA buffer (BMP I2.6). Stream 7 has a beaver dam and pond located at its junction with stream 8. Stream 8 is of no concern. Stream 9 is of no concern. Stream 10 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16). Kootz-noowoo Inc. has special use permit to locate road across southern boundary of this unit.
M.Dillman, J.Wrate 7/I3/95 M.Dillman, B.Johnston 7/I3/96	WILDLIFE: Beaver ponds directly west of NW corner of unit. Deer sighted in muskeg north of unit. Bear signs in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 7/13/96 Bear/game trails throughout unit. This unit has a proposed road connection between private land and Forest Service land in it.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: WT outside NE stream buffers at south end are dropped already. Dropped 2 acres - wetland soils. Ap-proximatley 8 ac helicopter at south end, useing groups selections (1-2Ac cuts) around streams in SE and NW. Shovel yard the center of the unit by OSR >I4:" diameter limit.

Chasina Study Area Interim Layout NOI Unit 679-441

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Warfield on November 01, 1998

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-446 ACRES: 13 VOL: 234 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: '91-390-145 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: SH,RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902- , high windthrow risk, portion downhill yarded. Productivity of site is high. Partial cut buffer. May not be a unit after buffer retention. Option: unevenaged group selections.
	ROADS:
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped primarily 550 C (St. Nicholas - Kaikli 5-35%), with 442 D (Ulloa - Sarkar 35 - 60%) W side. Partial suspension forested wetlands and karst (BMPs 12.5, 13.9). Deleted low volume NE, may be more. Potential additions small amount SW and SE corners. Streams by fisheries (BMPs 12.6a, 13.16). Changed to shovel yarding. Procede per requirment BMP 13.9 for slope, topography, walking on wood or pads, topography, crossing streams, felling, spur roads, turns.
K. McCartney, K. Buckley, H. Roerick, 7/21/95	FISHERIES: Streams 1, 2, 3, 4, 5, 6, and 10 are class I blue/white streams that all require 100' TTRA buffers (BMP 12.6). Beaver ponds in the unit also require 100' buffers (BMP 12.6). Stream 7 is a class III orange/white that requires directional falling, and-split yarding or full suspension, and immediate slash removal (BMP 13.16, 12.6a). Recommend deleting unit. Road to the south of unit needs timing and passage (BMP 14.14).
D.Parker, M.Pacheco 8/11/95 C.Tighe, B.Johnston, A.Mueller 5/18/96	WILDLIFE: Deer and bear sign common. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/18/96 Active beaver ponds found on stream near unit.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Patch cuts. Stay out of streams N and SE. Shovel yarding. Road change: through center of unit going west rather then through south end of unit. Apply unevenaged management by cutting 3-4, 1-2 acre patches centered on the high volume patches w/heavy mistletoe. Shovel yard.

Chastina Study Area Interim Layout NOI Unit 679-446

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
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Created by Sally Werfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

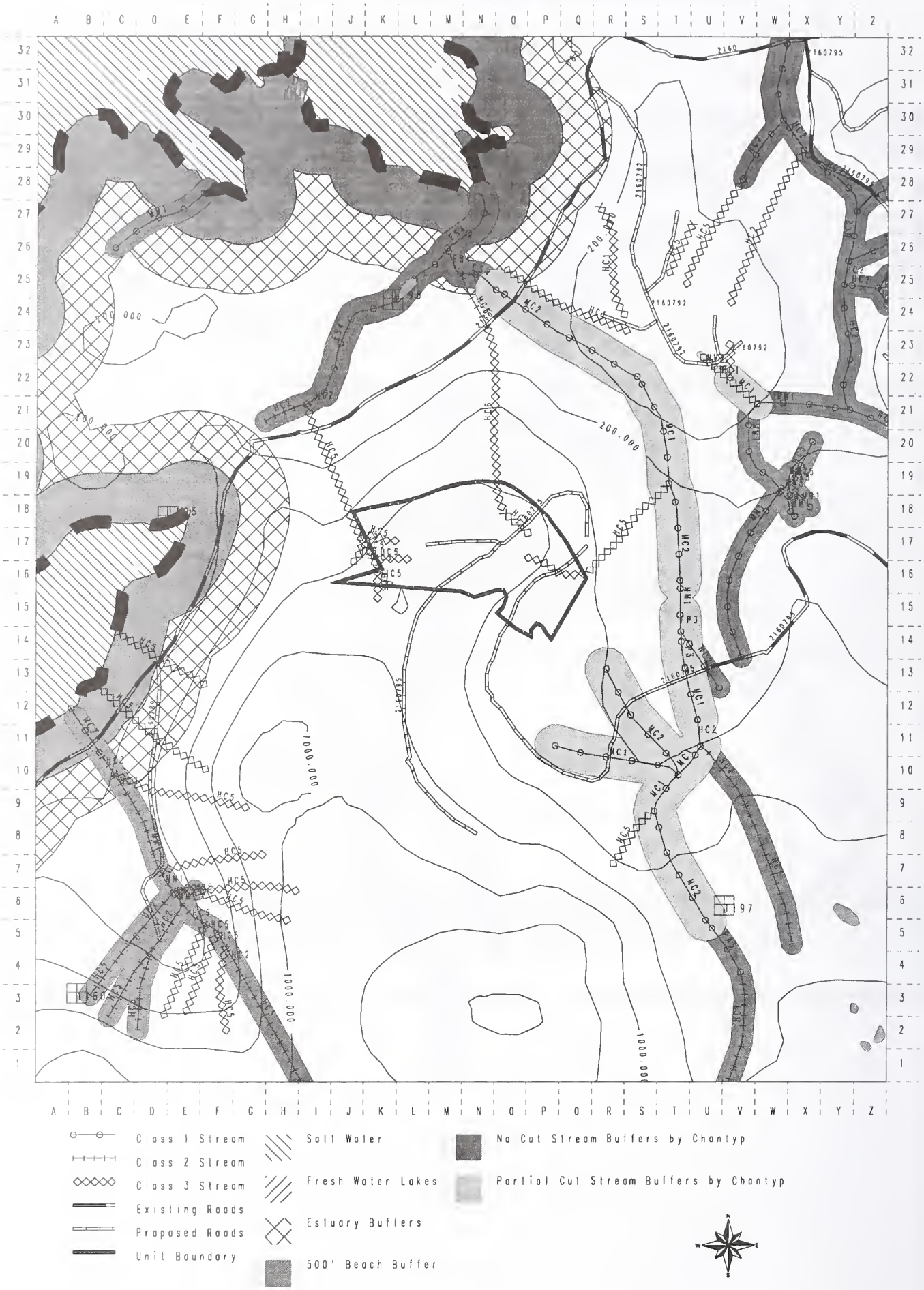
VCU-UNIT#: 679-447 ACRES: 51 VOL: 1381 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-145 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: RS,SH

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902-35, mod. windthrow risk. Retain stand structure for wildlife where feasible. Possibly karst to S.E.. Productivity of site is high. Field checking altemative regeneration methods. Maintain setting width between units. Steep. Option: helicopter G.S. / cc type C.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 11/07/95	SOILS/WATERSHED: Soils mapped 57D, 40E, 3D, 57E, 442, 442D. Soils N side and top primarily Tolstoi, Traitors, Tokeen, Helm. Slopes generally less than 75%, although inclusions up to 110% with rock outcrops - such as SW corner, and top less than 45%. N boundary limited below top of ridge because steep slopes, wet, unstable, blind leads (BMPs 12.5, 13.5, 13.9); should be close to as shown on unit card. Potential problem getting road to top of ridge making grade (BMP 14.2). Potential delete NW corner because low volume. Addition made to SE corner. Partial suspension forested wetlands, MM13, rock outcrops, potential karst (BMPs 12.5, 13.9). May be additional streams needing protection (BMP 13.16).
J. Frank, B. Johnston, K. Buckley, 10/5/95	FISHERIES: Stream 1 is a class 1 blue/white at its mouth; where it enters the unit in the northwest, it is a class III orange/white that requires a slope break buffer plus 25' (BMP 12.6). Streams 2, 4, 5, and 6 are class III green/white streams. Recommend possible deletion of the protion of unit west of the orange/ white class III stream. Steep slopes, maybe soils concern. Orange/white streams require directional falling, and split yarding or full suspension, and immediate removal of introduced logging debris (BMP I3.16). Green/white systems require directional falling, and split yarding (where practical) or partial suspension. Streams must be cleaned of introduced logging debris before the end of the operating season or before the yarder leaves the area (BMP 13.16, 12.6a). May be additional streams in the section that was added on in the SE corner.
D.Parker, M.Pacheco 8/10/95 C.Tighe, T. Belfield 7/13/96	WILDLIFE: Game trails, pellets, browse and beds. This unit is identified as an important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 7/13/96 Unit surveyed for TES plants, w/ T.Belfield, botanist. Malaxis monophylla , bog adder's-mouth orchid ,was found in the vicinity of the unit. This plant is not on the Forest Service sensitive species list.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension required. Dropped 18 acres for scrub and steep slopes. 1/3 of unit w/running skyline, 2/3 shovel yarding.

Chesino Study Area Interim Layout NOI Unit 679-447

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-450 ACRES: 57 VOL: 1425 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-144 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902-53, high windthrow risk. Productivity of site is high. Expanded to the east. Unit design calls for clear-cut regeneration method. Verify roads and/or landing locations. Option: helicopter group selections.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped primarily 57E (Petrel 60-75%), with 40E (Sarkar - McGilvery 60-75%) and 57D (Petrel 35-60%). Partial suspension for MM13, forested wetland, McGilvery, karst (BMPs 12.5, 13.9; TLMP 1991).
K.McCartney, K.Kitchel, S.Deck, D.Kuntzsch, 6/21/96	FISHERIES: Stream 1 is a V-notch in the east half of the unit; it is a class III orange/white. Stream 2 is a class IV green/white tributary to stream 1. There are karst sink holes in the west portion of the unit. There are several non-streams scattered through the unit, and pistol butted trees. Orange/white stream requires directional falling, and split yarding or full suspension, and immediate removal of introduced logging debris (BMP 13.16, 12.6a). Green/white stream requires directional felling and split yarding (where practical), or partial suspension. Must be cleaned of introduced logging debris before the end of the operating season or before the yarder leaves the area (BMP 13.16, 12.6a). The area that was added on to the unit in the northeast is steep. The footslope area has two class II blue/white streams present (possibly class I blue/ white). This area may need to be modified due to steep slopes, soils and buffers.
D.Parker, M.Dillman, C.Tighe 7/26/95 D.Parker, B.Johnston 8/17/95 C.Tighe, B.Johnston, A. Mueller 5/22/96 T.Belfield 7/96	WILDLIFE: Deer browse, tracks and pellets throughout unit. Bear signs and wolf tracks . Dead bear found between this unit and unit 679-451. Karst canyons and faults in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/22/96 Large bear in helispot. This unit was surveyed for sensitive plants by the botanist. Malaxis monophylla, bog adder's-mouth orchid, was found in the vicinity. No plants off the Forest Sertvice sensitive species list were found.
J.Baichtal 5/15/96 10/22/96 T.Fifield 10/28/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Karst is only a minor component of the unit and of low vulnerability. There are no resource concerns for this unit. LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Large deep V-Notch SE corner-original unit better, go back to orgional - propably pending review. Partial suspension required. Dropped 7 acres for scrub at east end. No karst.

Chasina Study Area Interim Layout NOI Unit 679-450

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portiol Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Warfield on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-451 ACRES: drop VOL: drop MBF ALTERNATIVES:

PHOTO YR/#: '91-390-144 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902-51, low windthrow risk. Productivity of site is high? Uneconomic, low volume area surrounding. Field checking alternative regeneration methods.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 57C (Petrel 5-35%). Helicopter yarding prescribed, should adequately protect watershed resources (BMPs 12.5, 13.9, 13.16).
K. Buckley 8/96	FISHERIES: Office review determined no fisheries concerns.
D.Parker, M.Dillman, C.Tighe 7/26/95 C.Tighe, B. Johnston, A. Mueller 5/22/96, Baichtal 10/2/96	WILDLIFE: Deer and bear signs in area. Dead bear and orchid, (Platanthera chorisiana), choris bog-orchid, found between this unit and #679-450. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/22/96 Bear tracks in muskeg. Large bear in helispot. Unit 679-450 was resurveyed by botanist T.Belfield on 7/96 and no sensitive plant species were found. 10/96 high deer usage.
J.Baichtal 10/22/96	GEOLOGY/MINERALS: No minerals concerns. Unit is primarily underlain by marble interbedded with chlorite schist. Unit is surrounded by muskegs developed on schist. Waters from these muskegs sink into large karst features along the southern edgs of the unit. Epikarst is very well deveoped and sinkholes are numerous. Soils are a mosaic of shallow to deep residual soils and shallow soils atop epikarst ridges. Because of the density and size of karst features within the unit unit is high vulnerability. It is recommended that this unit be deleted from the proposed unit pool as per the standards and guidelines outlined in the RSDEIS for the TLMP. LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Drop very low volume.

Chasina Study Area Interim Layout NOI Unit 679-451

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

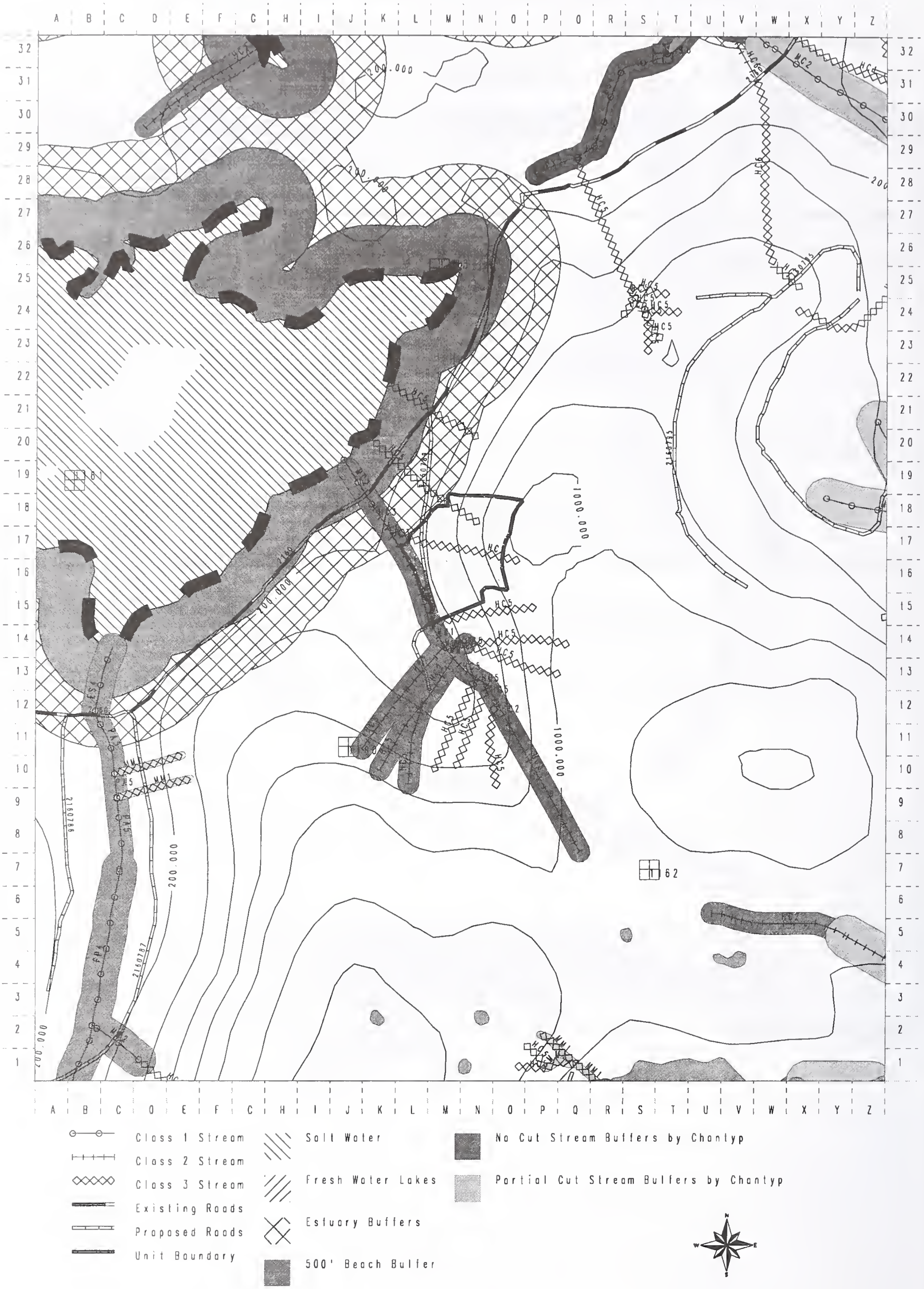
VCU-UNIT#: 679-467 ACRES: 23 VOL: 920 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-145 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-55, low windthrow risk, portion downhill yarded. Retain stand structure for wildlife where feasible. Productivity of site is high. Partial cut buffer. Field checking alternative regeneration methods. A maze of streams at South end. Helicopter group selections may be the only option. - May drop.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr 10/13/95 EIS R.Johnson	SOILS/WATERSHED: Soils Tolstoi, Kupreanof, McGilvery, with Kaikli and Kitkun. Slopes 30-160%. About 7 acres forested wetlands. Deleted areas MMI 4, slides, extremely steep and low volume on south and east side of unit (BMP 13.5). Approximately 5 acres on slopes greater than 75% in the northeast corner of the unit. About 15 acres of high MMI soils in the unit. A minimum of partial suspension is required (BMP 13.9). About 5 acres of McGilvery soils on boulders just west of main stream south end of unit. Full suspension is required over the McGilvery / boulder / slide area, although area should be deleted (TLMP 1991). Full suspension is also required in the northeast corner of the unit above the first cliff where slopes exceed 75% gradient (BMP 13.9). Helicopter yarding recommended, done as unit 679-506. A minimum of a 100 foot buffer should be placed on the main creek (BMPs 12.6, 12.6a). Two streams for O&W protection. Two streams for G&W protection (BMP 13.16). Road access to unit appears feasible (BMP 14.2).
K. McCartney, J. Hannon, 6/22/95	FISHERIES: Stream 1 is a class II blue/ white that requires a 120' TTRA buffer and fish passage and timing (BMP 12.6, 14.14). Stream 2 is a class III green/ white. Stream 3 is a class III green/ white. Stream 4 is a class III orange/ white. Stream 5 is a class III green/ white. Stream 6 is a class III green/ white. Stream 7 is a class III orange/ white. Stream 10 is a class III green/ white. Stream 11 is a class III green/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16). Recommend deleting south half of unit, and not taking the road or unit past the headwall around the top of the unit.
D.Parker, J.Wrate, M.Pacheco 6/21/95 M.Dillman 10/96	WILDLIFE: Deer sign in unit. This unit identified as an important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live trees and snags where possible to maintain habitat structure and snag density. This unit exceeds the steepness recommended by the current goshawk protocol so was not surveyed during 1996.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96 D.J.L., R.J. 10/95	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Group selection - helicopter group selections, of 5 groups at 2 acres each - 4 entries / rotation in size groups. O&W streams: require DF, SY, or full suspension, and cleaning of introduced debris immediately. G&W streams: require DF, SY (where possible) or partial over, and cleaning the stream of introduced debris before the end of the the operating period or before the yarder leaves the area. Drop South 1/4 for streams. Drop west of streams - hard to read. Minimum of partial suspension required.

Chosino Study Area Interim Layout NOI Unit 679-467

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

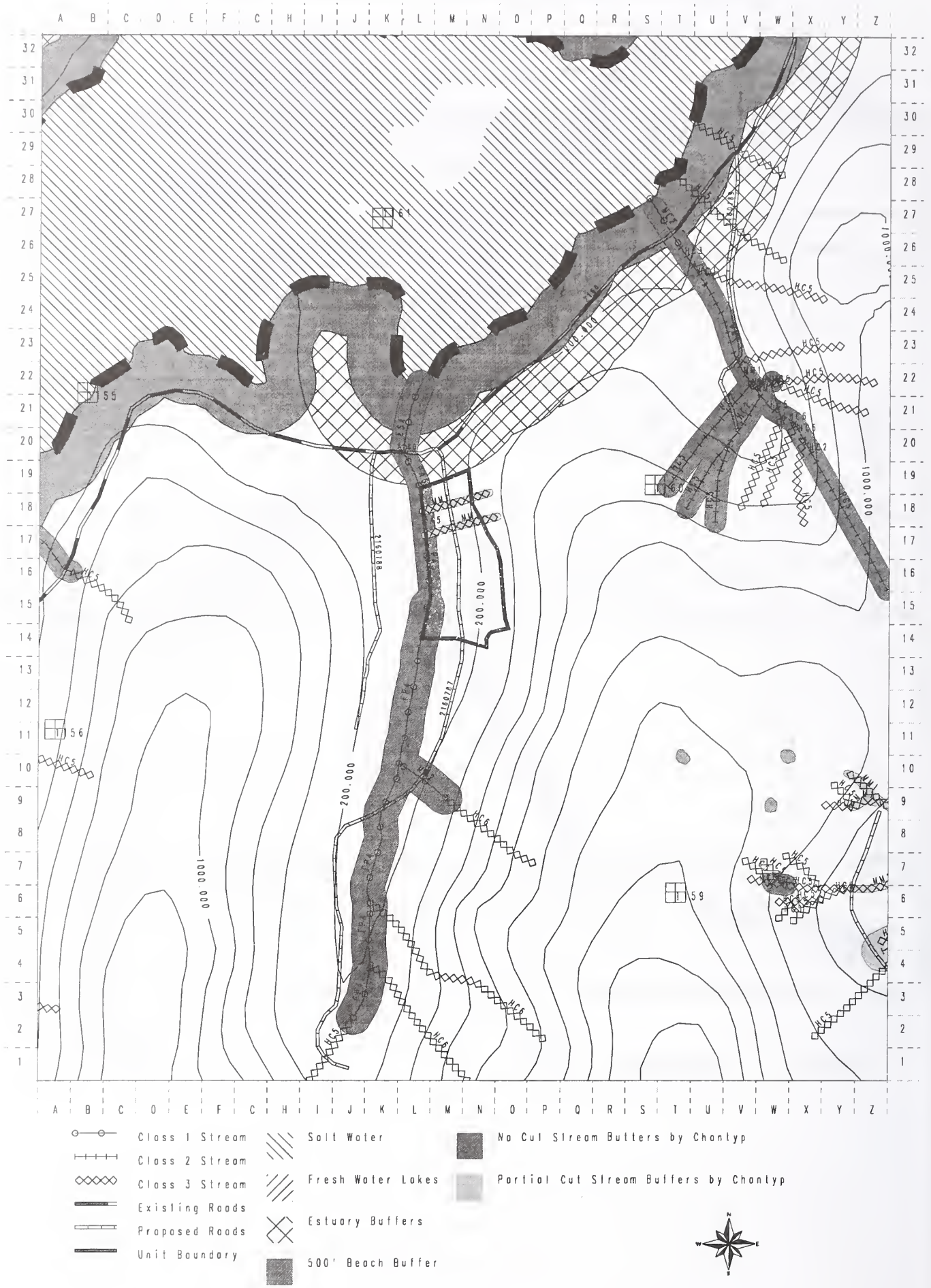
VCU-UNIT#: 679-470 ACRES: 25 VOL: 625 MBF ALTERNATIVES: 2,3,6

PHOTO YR/#: '91-490-137 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-160, high windthrow risk, portion downhill yarded. Unit changed to provide proportionality of volume classes. Retain stand structure for wildlife where feasible. Productivity of site is moderate. Suspension requirements (see soils or fish). Drop off eastern 1/2 above 300' elevation due to cliffs and low volume timber.
	ROADS:
R.Johnson 8/03/95	SOILS/WATERSHED: Soils remaining unit Tolstoi and Traitors, with Tokeen, Kitkun, and colluvial McGilvery. Slopes 30 to 75%. Partial suspension for MMI3, forested wetlands, McGilvery (BMPs 12.5, 13.9; TLMP 1991). Blowdown common, especially S end. Small portion below road on 30-45% acceptable above riparian on class I stream (BMPs 12.6, 12.6a). Deleted above 370' on S end to 200' on N end for steep, rock faces and cliffs, MMI4 Helm, and McGilvery (BMP 13.5; TLMP 1991). Three ephemeral drainages S end some protection partial suspension; O&W on stream N boundary (BMP 13.16).
D. Kuntzsch, K. McCartney, J. Wrate, C. Tighe. 6/16/95	FISHERIES: Stream 1 is a class III green/ white. The 2 is a class III green/ white. The green/ white streams require directional falling, split yarding (where practical), or partial suspension. Remove introduced debris from the stream channel before the end of the operating season or before the yarder leaves the area (BMP 13.16). Recommend leaving a strip of timber between land slide and rock pit and keep unit boundary above the road. Below the cliffs that run north-south halfway through the unit, water is moving through the soils across the entire slope.
C.Tighe, J.Wrate 6/16/95 B.Johnston, A. Mueller 6/7/96	WILDLIFE: This unit is identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Maintain 1000 foot estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. O&W streams require DF, full over or SY and cleaning of introduced debris immediately. Take unit body to stream buffer (100') to the west. Partial suspension required. "Unit dropped from the preferred alternative due to proportionality based on acres."

Chasina Study Area Interim Layout NOI Unit 679-470

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

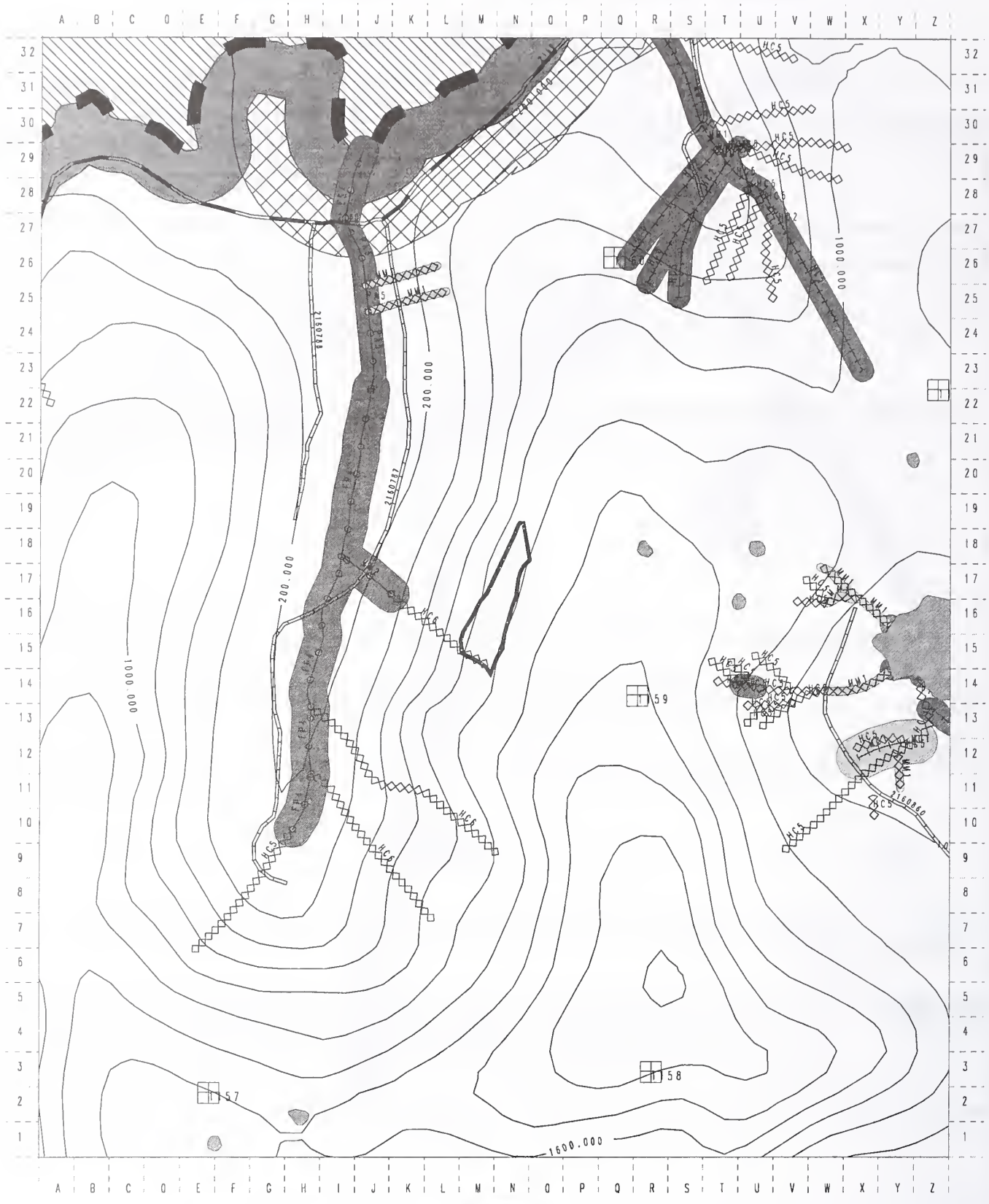
VCU-UNIT#: 679-471 ACRES: 8 VOL: 120 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-490-136 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-165, high windthrow risk, moderate elevation. Productivity of site is low. Cliffs to the west dropped out and low volume to the east dropped out.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr 9/11/95 EIS R.Johnson	SOILS/WATERSHED: Soils StNicholas with McGilvery and Tolstoi. Slopes 60-100% and cliffs. Deleted upper portion low volume forested wetlands (BMP 12.5). Deleted MMI 4, cliffs, very steep lower portion unit (BMP 13.5). Remaining unit: High MMI soils throughout unit. A minimum of partial suspension is required. Helicopter yarding prescribed should achieve full suspension (BMP 13.9). South boundary stream should be designated O&W with a variable width slope-break buffer (BMP 12.6a). The stream in the middle of the unit should be designated O&W. Two smaller streams in the north end of the unit should be designated G&W but should have cleanout of introduced debris within 24 hours due to high debris torrent potential (BMP 13.16).
K. Buckley, 7/96	FISHERIES: Office review determined that stream protection should follow soil/ watershed directions. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris within 24 hours due to high debris torrent potential (BMP 13.16).
D.Parker, M.Pacheco, B.Johnston 7/31/95 M.Dillman 10/96	WILDLIFE: Game trails, pellets and browse in unit. Deer snorted in response to goshawk call. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Wildlife did not survey in 1996 due to the elevation and steepness of this unit: both are over the standards in the current goshawk protocol.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. G&W streams requires DF, and SY (where practical) or partial over, but should have cleanout of introduced debris within 24 hours due to high debris torrent potential (BMP 13.16). O&W streams require DF, full over or SY and cleaning of introduced debris immediately (BMP 13.16).

Chosino Study Area Interim Layout NOI Unit 679-471

Mapscale 1:15840 (4 inch to Mile)



- Class 1 Stream
- Class 2 Stream
- Class 3 Stream
- Existing Roads
- Proposed Roads
- Unit Boundary
- Salt Water
- Fresh Water Lakes
- Estuary Buffers
- 500' Beach Buffer
- No Cut Stream Buffers by Chantyp
- Partial Cut Stream Buffers by Chantyp

N W E S

Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

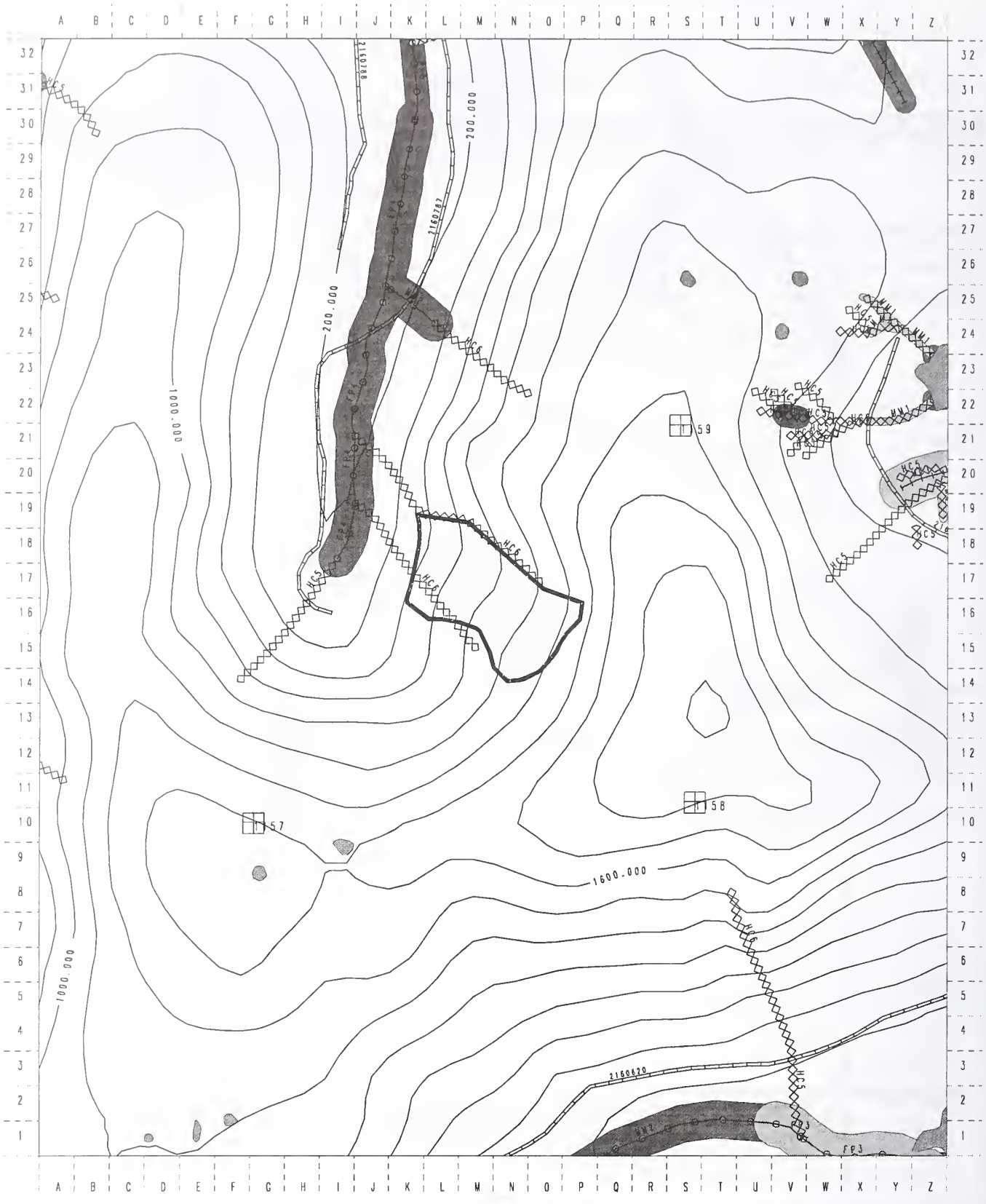
VCU-UNIT#: 679-473 ACRES: 31 VOL: 775 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-136 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 6790I- , high windthrow risk. Productivity of site is moderate. Uneconomic, low volume area above approximately 1400'. Suspension requirements (see soils or fish). Very steep.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr 10/17/95 EIS R.Johnason	SOILS/WATERSHED: Soils Remedios, Tolstoi, McGilvery. Slopes 40-90%. About 2 acres of very high MMI soils along the south boundary creek deleted, as was MMI 4 area upper portion of unit (BMP 13.5). High MMI soils in the rest of the unit, with small cliffs. Full suspension recommended, and should be achieved with prescribed helicopter yarding (BMP 13.9). The north and south boundary streams should be designated O&W, because old avalanche shoots (BMP 13.16). Directional fall, split yard and clean of introduced debris. One small tributary to the south boundary creek requires no protection and is in the area deleted. One stream in the middle of the unit for G&W protection, DF, SY, or partial suspension, and clean of introduced debris before the end of the operating season.
K. McCarntey, M. Solomon 6/13/96	FISHERIES: Stream 1 is a class III orange/ white. Stream 2 is a class III orange/ white. Stream 3 is a class IV green/ white. Stream 4 is a class IV green/ white. Stream 5 is a class IV green/ white. Stream 6 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean introduced debris immediately from the stream channel (BMP 13.16). The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, M.Pacheco, B. Johnston 8/1/95 M.Dillman 10/96	WILDLIFE: Deer pellets and game trails and browsed blueberries in unit. Bear sign also present. Narrow bands (<3 feet) of white marble in stream in southwest corner of unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Wildlife did not survey in 1996 due to the steepness and elevation of the unit. Both are over the standards in the current goshawk protocol.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The lower portions of this very steep unit were surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. O&W streams require DF, full over or SY and cleaning of introduced debris immediately. G&W streams requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Full suspension required.

Chasina Study Area Interim Layout NOI Unit 679-473

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
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Created by Sally Warfield on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

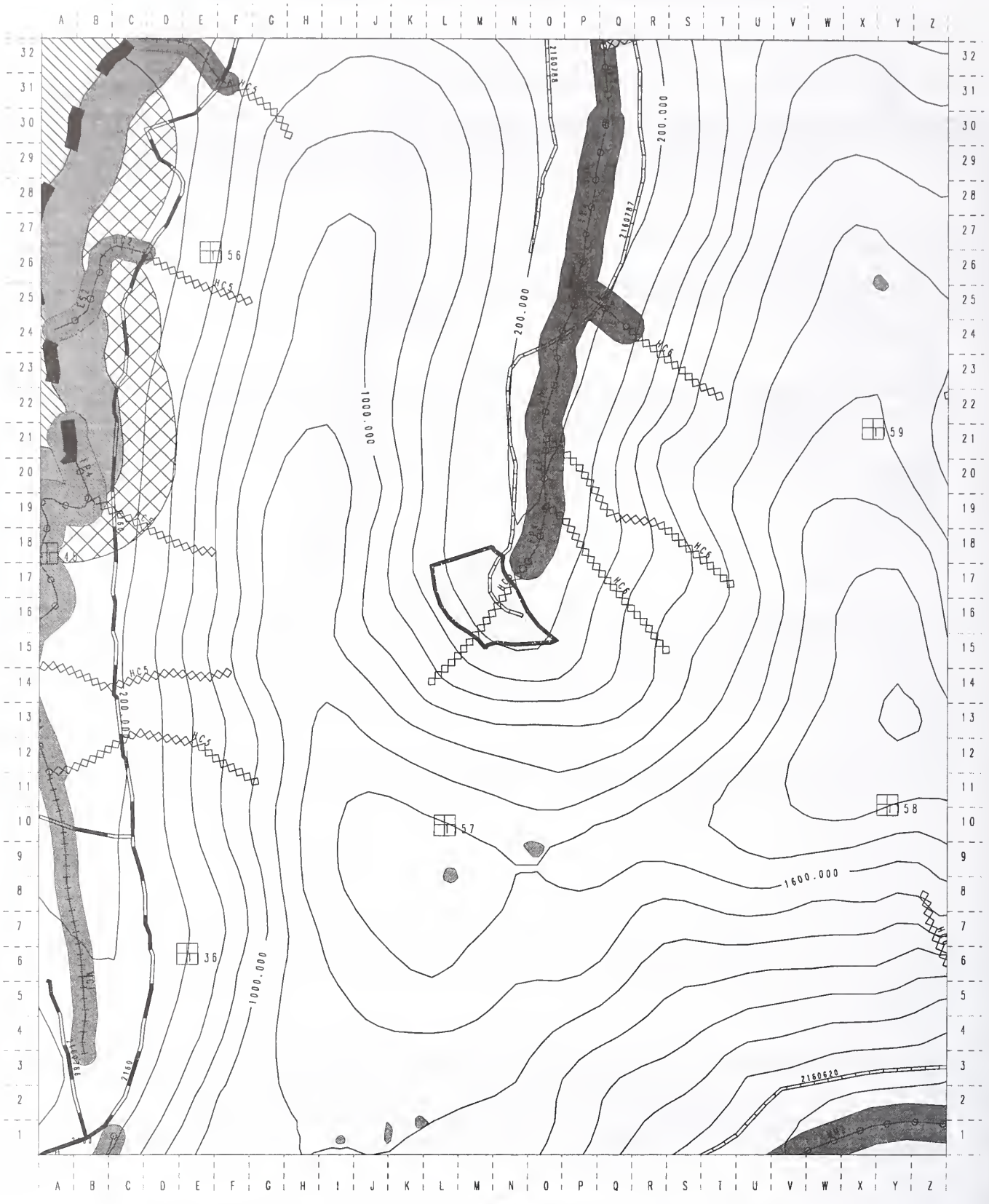
VCU-UNIT#: 679-475 ACRES: 14 VOL: 350 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-136 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER:67901- , high windthrow risk, portion downhill yarded. Productivity of site is low / moderate. Suspension requirements (see soils or fish). Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection (507). Small cable portion if soils can be protected. Option: helicopter.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 10/19/95	SOILS/WATERSHED: Unit converted to helicopter 679-507 to avoid crossing stream on ok. Get info. from 679-507 if this unit # used.
K. Buckley, M. Solomon, 6/21/96	FISHERIES: Stream 1 is a class III orange/ white that requires a slope break plus 25' buffer (BMP 13.16). Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 4 is a class III orange/ white. The orange/ white stream requires directional falling, and split yarding or full suspension . Clean stream of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Remove introduced debris before the end of the operating season or before the yarder leaves the area (BMP13.16).
M.Dillman, J. Wrate 7/11/95 C.Tighe, B.Johnston, A.Mueller 6/27/96	WILDLIFE: Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Wildlife surveyed this unit with 679-507 which is the helicopter portion of 679-475. Rocky unstable ground/landslides and blowdown in the unit.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The lower portions of this very steep unit were surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. O&W streams require DF, full over or SY and cleaning of introduced debris immediatly. G&W streams requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Type C helicopter. Overstory removal of everything above 16" DBH. Logging be helicopter. Leave snags standing and intact where possible.

Chasina Study Area Interim Layout NOI Unit 679-475

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Soil Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
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Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

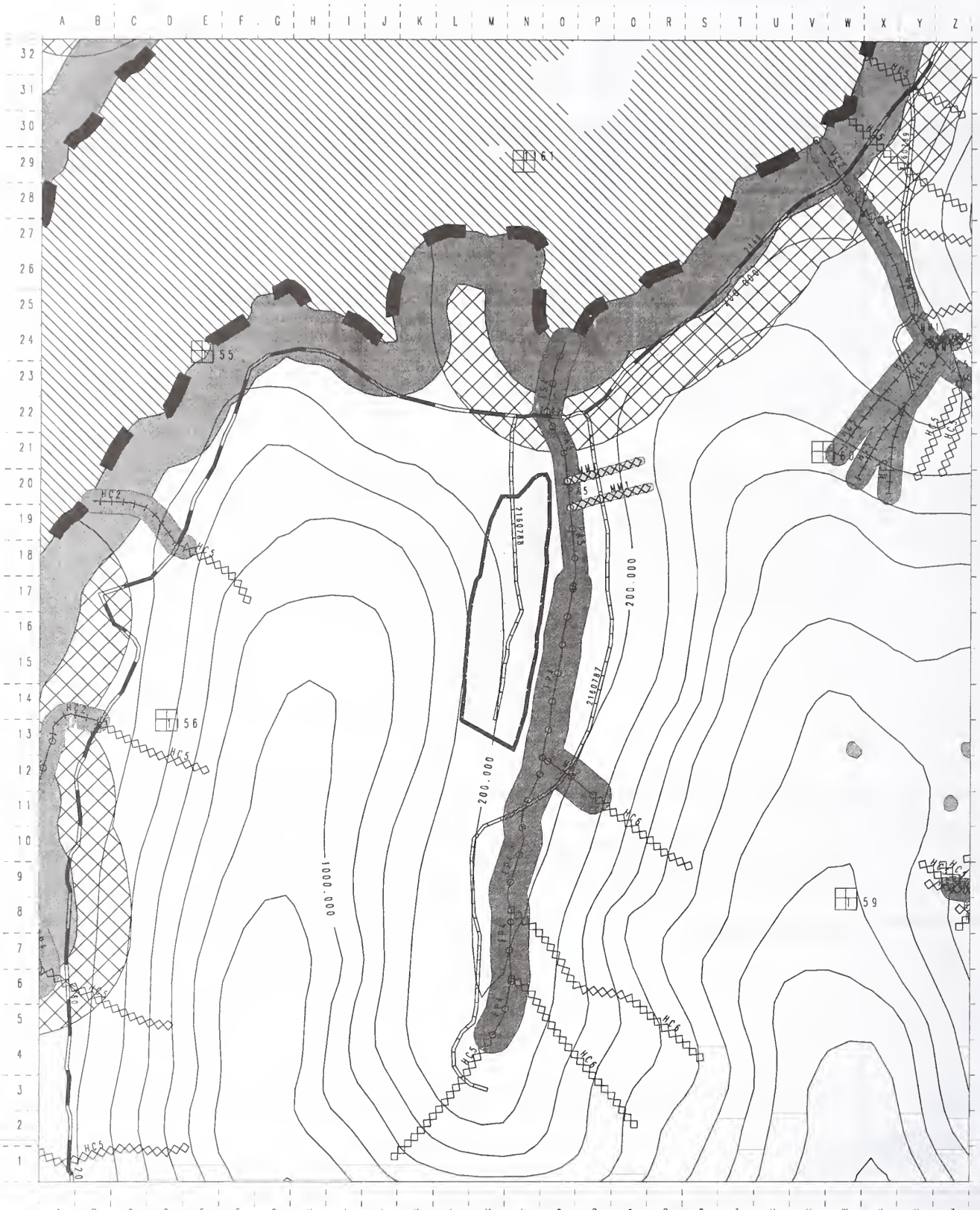
VCU-UNIT#: 679-477 ACRES: 31 VOL: 1085 MBF ALTERNATIVES: 3,4,5

PHOTO YR/#: '91-490-137 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901- , high windthrow risk, portion downhill yarded. Productivity of site is high. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection (unit 508). Bring in road from north if possible. Suspension requirements (see soils or fish). Buffers (see fisheries). Unit may be greatly reduced. Avoid soils problems. Option: helicopter.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 8/02/95	SOILS/WATERSHED: Lower boundary at 150 to 100' for riparian buffer on flatter lands above class 1 stream. These lands extend 75 to 100 yards from creek (BMPs 12.6, 12.6a). Upper boundary about 400' where discontinuous rock faces preclude cable yarding from road. Soils in unit mix Traitors, Tolstoi, Vixon, colluvial McGilvery, Tokeen, Hofstad. Slopes generally less than 75%, but inclusions greater and rock faces. Partial suspension for MM13 and McGilvery (BMP 13.9; TLMP 1991). O&W protection stream on S boundary, G&W N boundary (BMP 13.16). Addition N end unit between existing clear-cut up slope, and riparian buffer down slope. Keep 2160-788 road above riparian above class 1 stream (BMPs 12.6, 12.6a, 14.2). Do not believe road feasible on bench above suggested by engineers (BMP 14.2). Lands above 400' converted to helicopter unit 679-508.
K. Buckley, K. Kitchel, M. Solomon, K. McCartney, S. Deck, 6/6/96	FISHERIES: The stream along the east boundary, the main stream (ADF&G # 102-40-10150), is a class 1 blue/ white that requires a 120' TTRA buffer (BMP 13.16). Stream 1 is a class 1 blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 1 changes to a class III orange/ white 120' up from the main stream. Stream 2 is a class 1 blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 is a class 1 blue/ white the requires a 120' TTRA buffer (BMP 12.6). Stream 3 changes to a class III orange/ white 120' above the main stream. Stream 4 is a class III orange/ white. Stream 5 is a class III orange/ white. Stream 6 is a class III orange/ white. Stream 7 is a class III orange/ white. Stream 8 is a class III orange/ white. Stream 9 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16).
D.Parker, M. Pacheco 6/16/95 C.Tighe, B.Johnston, A. Mueller 6/27/96	WILDLIFE: Game trails and alder seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit identified as an important wildlife travel corridor. Recommend partial harvest to maintain forest structure and lessen the impact on wildlife migration and dispersal.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. O&W streams require DF, full over or SY and cleaning of introduced debris immediately. G&W streams requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Move boundry to the south adjacent to existing cut. Partial suspension required. Protect steep slopes.

Chasina Study Area Interim Layout NOI Unit 679-477

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Soil Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

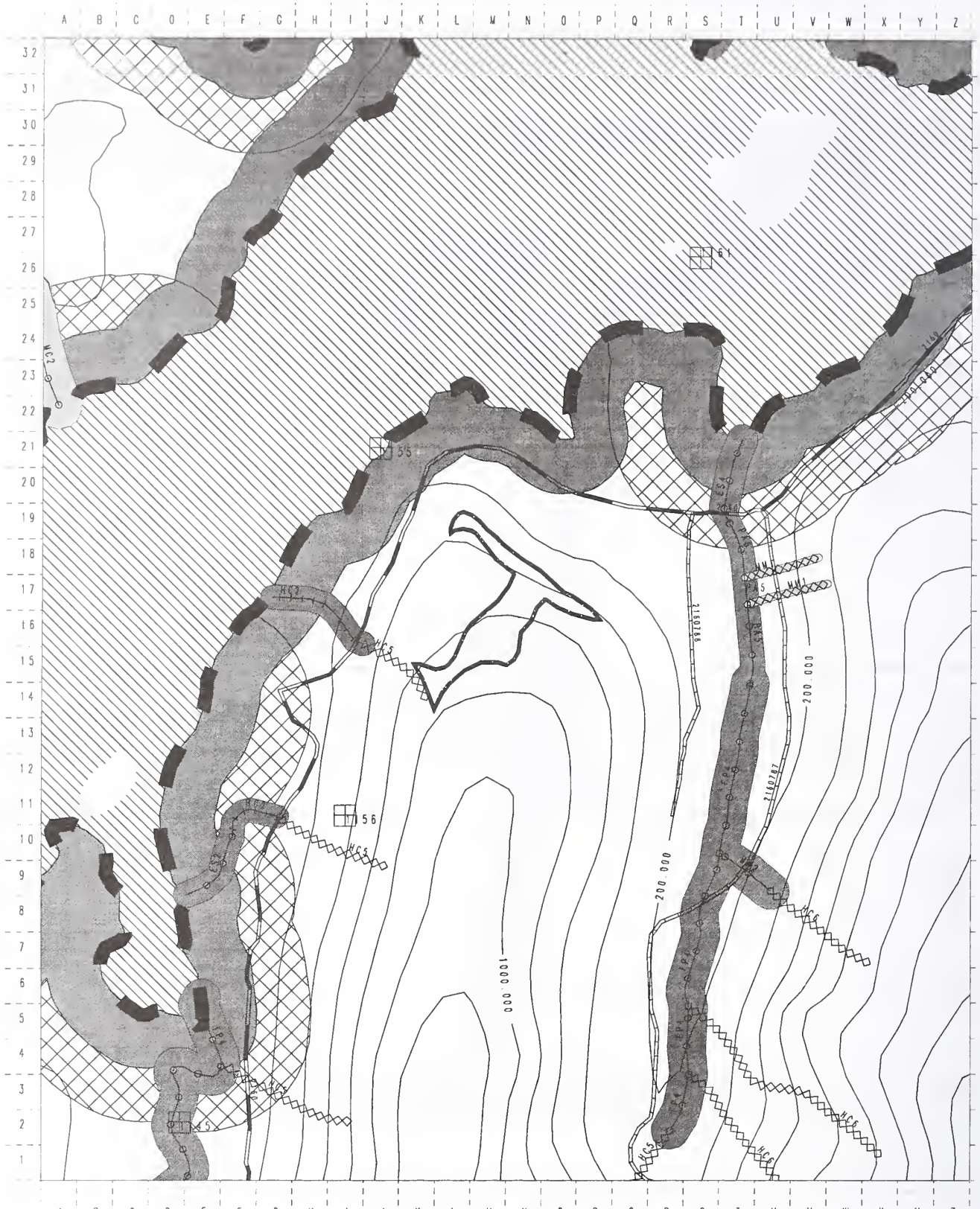
VCU-UNIT#: 679-479 ACRES: 15 VOL: 600 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-490-137 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 6790I-151, high windthrow risk, high mistletoe present. Retain stand structure for wildlife where feasible. Productivity of site is high. Dropped out major cliff on NE area. Leave 3 cedar seed trees / acre, clear-cut w/ reserves. Maintain setting width between units.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 3D (Vixen - Traitors 35-60%) and 4D (Helm 35-60%). Helicopter prescribed meets partial suspension on forested wetlands (BMPs 12.5, 13.9). Steep and rock face N boundary deleted by silviculture. Protection class III or IV streams per fisheries(BMP 13.16). Karst reported by fisheries and wildlife.
K. Buckley, M. Solomon, 6/14/96	FISHERIES: Stream 2 is a class IV green/ white. Stream 3 is a class III orange/ white, this stream was not flagged. The green/ white stream requires directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16). The orange/ white stream requires directional falling, and split yarding or full suspension and immediate removal of introduced debris from the stream channel (BMP 13.16).
D.Parker, B.Johnston, M. Pacheco 8/3/95 B.Johnston, A. Mueller 6/7/96	WILDLIFE: Game trails and bear scat throughout. Loon was heard from northwest area of unit (Kitkun Bay). Karst fault seen in unit. Unit is in an important wildlife travel corridor. Recommend partial harvest to maintain forest structure and lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/7/96 Deer sign in unit.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut - leave 10% structure.

Chosino Study Area Interim Layout NOI Unit 679-479

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

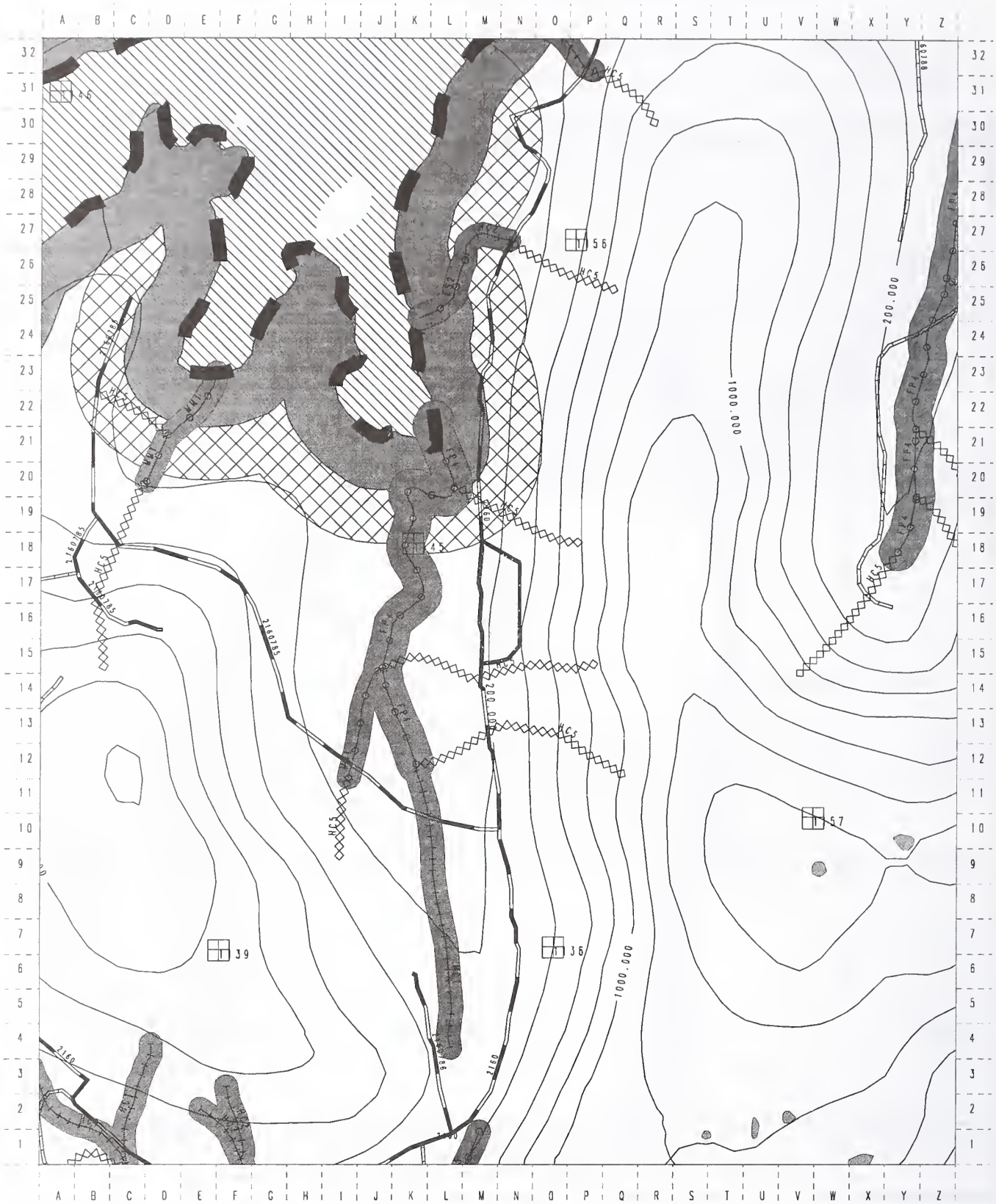
VCU-UNIT#: 679-483 ACRES: 9 VOL: 270 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-135 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67901-140, high windthrow risk, portion downhill yarded. Within designated old growth reserve. Retain stand structure for wildlife where feasible. Productivity of site is high / moderate. Salmonberry flats. Partial cut buffer. Dropped eastern area above cliffs and below road for stream protection. Suspension requirements (see soils or fish). Windthrow too high risk for partial cuts. Keep small.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr 10/25/95 EIS R.Johnson	SOILS/WATERSHED: Soils Tolstoi, Karta, with McGilvery, Tuxekan, Tonowek. Slopes 10 to 90%. Deleted wetlands, riparian, estuary buffer below road (BMPs 12.5, 12.6). Deleted above 400 feet MMI 4, cliffs, very steep, one stream (BMPs 12.6, 13.5). Remaining unit: High MMI soils throughout. A minimum of partial suspension required (BMP 13.9). The north and south boundary streams occur in the avalanche areas, and should be designated O&W (BMP 13.16). Directional fall, and split yard or full suspension. Clean of introduced debris within immediately. Several fish streams occur downslope of the road. An estuary lies northwest of the proposed unit. A 1,000 foot estuary buffer from the edge of the bay will include about 1 acre of the proposed unit. The tidal influence and grass flat extends several hundred feet up the stream around the first bend. **If the 1,000 foot estuary buffer is measured from the tidal influence then about 70% of the proposed unit is in the estuary buffer.** Planting recommended because of disturbance species present.
K. Buckley, M. Solomon, 6/14/96	FISHERIES: Stream 1 is a class III orange/ white that requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16).
M.Dillman, J.Wrate 7/11/95 M.Dillman 10/96	WILDLIFE: Bear sign throughout-more common than deer sign. This unit is within a designated old growth reserve. If current policy changes and this unit is to be harvested, wildlife will need the chance to survey the area again prior to harvest.. Also, unit is in an important wildlife travel corridor. Therefore, if harvested, recommend partial harvest to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit was not surveyed in 1996 due to the fact that it is in an old growth reserve. This unit may have a significant portion of its acreage in the estuary buffer depending on the final definition of an estuary. If unit is harvested wildlife will the opportunity to conduct surveys in the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. O&W streams require DF, full over or SY and cleaning of introduced debris immediately. Dropped due to estuary buffer.

Chasina Study Area Interim Layout NOI Unit 679-483

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portion Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

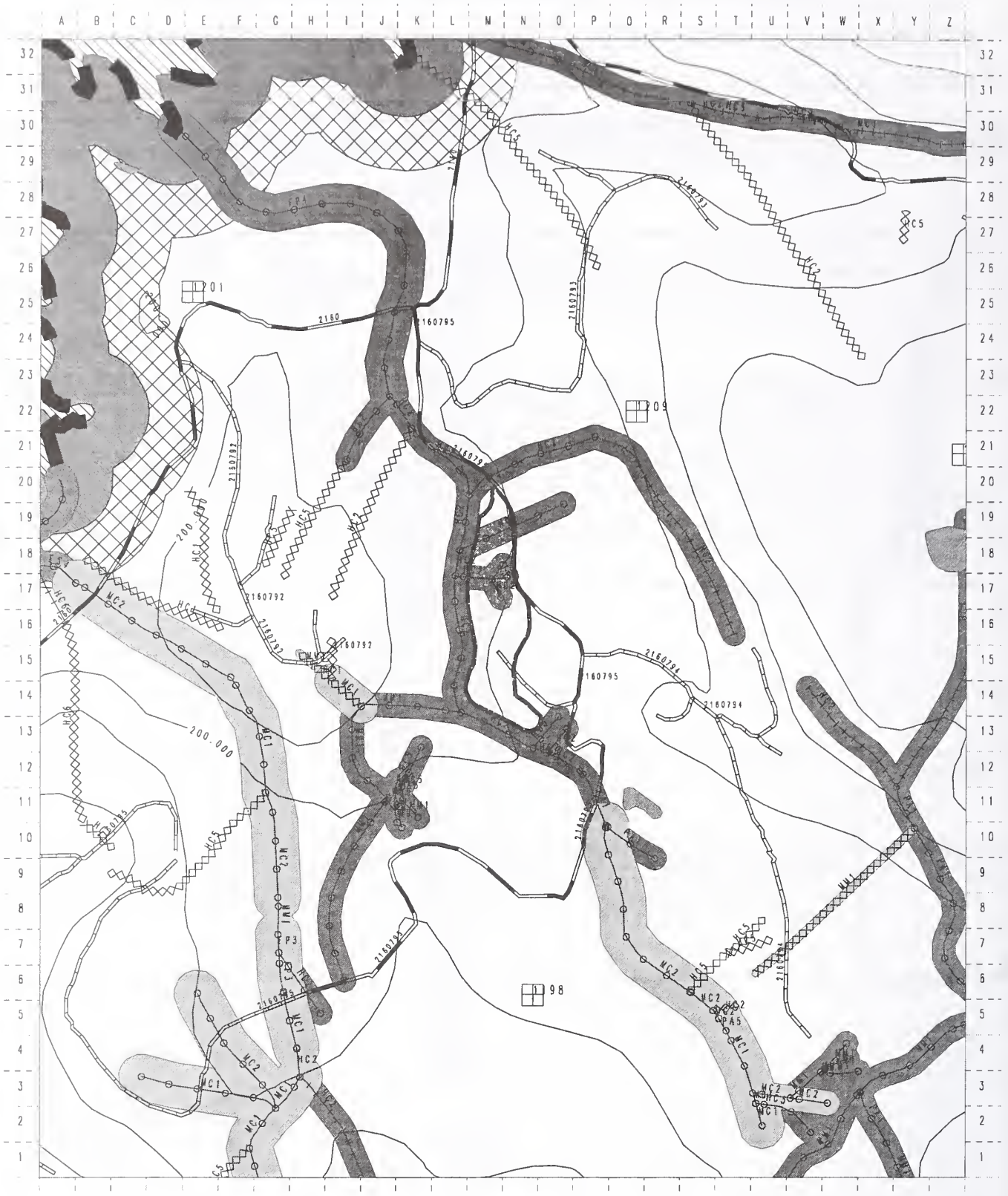
VCU-UNIT#: 679-497 ACRES: 21 VOL: 683 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-145 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: RS/SH

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 67902-82, high windthrow risk. Productivity of site is high. Maintain setting width between units. Spur roads will need extending, shovel flat ground. Partial cut buffer.
J. Oien 5/96	ROADS: No concerns.
R.J. 6/96	SOILS/WATERSHED: Soils mapped 1C (Vixen 5-35%) and 550C (StNicholas - Kaikli 5-35%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). Shovel log per protection guidlines BMP 13.9 for slope, topography, support shovel, crossing streams, felling, spur roads, and turns.
K. McCartney, J. Hannon, 6/22/95	FISHERIES: Stream 1 is a class I blue/ white that requires a 150' TTRA buffer (BMP 12.6). Stream 2 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 is a Class I Blue/ white that requires a 120' buffer (BMP 12.6). The existing culvert on this stream is not passable. Stream 4 is a class I blue/ white that requires 120' TTRA buffers on all channels (BMP 12.6). Stream 5 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 5 turns into a class III orange/ white 200' into the unit. The class III orange/ white requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). Existing culverts are not be passable to fish and may need work (BMP 14.14).
D.Parker, J.Wrate, M. Pacheco 6/21/95 M.Dillman 7/11/96	WILDLIFE: Deer and bear sign seen in unit. Fawn hoof found--wolf kill. 7/11/96 Deer and bear sign-pellets, trails, scat, tracks, and dug-up skunk cabbage seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required and shovel yarding. Dropped 3 acres in SW corner buffer between creeks. Shovel yard where possible set boundry lines with windthrow potential in mind.

Chosina Study Area Interim Layout NOI Unit 679-497

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-501 ACRES: 15 VOL: 300 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '91-390-225 1/4 QUAD: CRG A 1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , low windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is low. Partial cut buffer. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to equipment limitations (679-361). Maintain YC component through planting / selection cut if needed. Uneconomic, low volume area surrounding unit. May be dropped due to low volume.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 8/16/95 EIS R. Johnson	SOILS/WATERSHED: Add on to unit 679-361, made into helicopter unit. Mixed conifer wetland, minimum partial suspension (BMPs 12.5, 13.9). Full suspension should be acheived by helicopter yarding.Believed non-merchantable, and not worthwhile with 100 foot buffer on stream.
M. Becker, K. Buckley, 8/28-29/95. K. Buckley 7/96	FISHERIES: Stream 2 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 6 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 7 is a class III orange/ white. Stream 8 is a class III orange/ white. Stream 9 is a class III orange/ white. The orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16).
C.Tighe, B.Johnston, A. Mueller 6/26/96 Johnston/Mueller 7/19/96	WILDLIFE: This is the helicopter portion of unit 679-361. A pair of lesser yellow-legs were seen in the muskeg helispot. Deer pellets and beds, game trails, and bear scat were seen throughout the area. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit was not surveyed in 1995 because at the time it was within unit 679-361. In 1996 it was pulled out of 679-361 and made a seperate helicopter unit.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. "Unit added from the preferred alternative due to proportionality based on acres."

Chasina Study Area Interim Layout NOI Unit 679-501

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-502combinedw/382 ACRES: 18 VOL: 180 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '71(51)-1472-44 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windthrow risk. Unit changed to provide proportionality of volume classes. Retain stand structure for wildlife where feasible. Productivity of site is low. Partial cut buffer. Option: Uneven-aged Mgmt: for regeneration and structure retention. Group selection - helicopter group selections, 5 groups of 2 acres each in size groups. Adjacent to 679-382.
J. Oien 5/96	ROADS: No concerns.
R.Johnson. 6/96	SOILS/WATERSHED: SW corner of 679-382 converted to helicopter unit to protect streams and buffers prescribed by fisheries (BMPs 12.6a, 13.9, 13.16). Soils mapped 1C (Vixen 5-35%), 3D (Vixen - Traitors 35-60%), 550C (StNicholas - Kaikli 5-35%), 40D (Sarkar - McGilvery 35-60%). Confusion because unit card and 1971 photos do not match. Potential not harvestable low volume and open wetland included in helicopter unit (BMP 12.5). Potential blowdown of buffers. Fisheries noted both very wet soils, and blowdown. Potential to delete helicopter unit (BMPs 12.6, 12.6a, 13.16, 12.5).
K. Buckley, M. Solomon, B. Johnston, R. Johnson. 6/21/96	FISHERIES: Stream 1 is a class I blue/ white that requires a 200' TTRA buffer (BMP 12.6). Stream 2 is a class III orange/ white that requires a 25' buffer because the stream is flowing through an unstable alluvial fan directly above fish habitat (BMP 13.16). Stream 4 is a class I blue/ white that requires a 140' TTRA buffer (BMP 12.6). At an elevation of 240', stream 4 becomes a class III orange/ white. The orange/ white stream requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16).
B.Johnston, K.Buckley, R.Johnson, M.Solomon 6/21/96	WILDLIFE: This unit is the helicopter portion of unit 679-382. Unit has been identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Four CMT's, (Culturally Modified Trees), were found in the unit. Deer browse and pellets seen in unit. Woodpecker species heard.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. Dropped combined with 679-382. "Unit dropped from the preferred alternative due to proportionality based on acres." Combined with 679-382. Helicopter 3-4 patches of 3/4 acre in size.


Chasina Study Area Interim Layout NOI Unit 679-502
Mapscale 1:15840 (4 inch to Mile)
Created 5-95, /u07/projects/chas_nc/arcs/riguc2
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
HCS
200 000
1000 000
1000.000
6.0 ACRES
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21
Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
500' Beach Buffer
Estuary Buffers
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp
Fresh Water Lakes
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0.5 Miles
Mapscale 1:15840

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

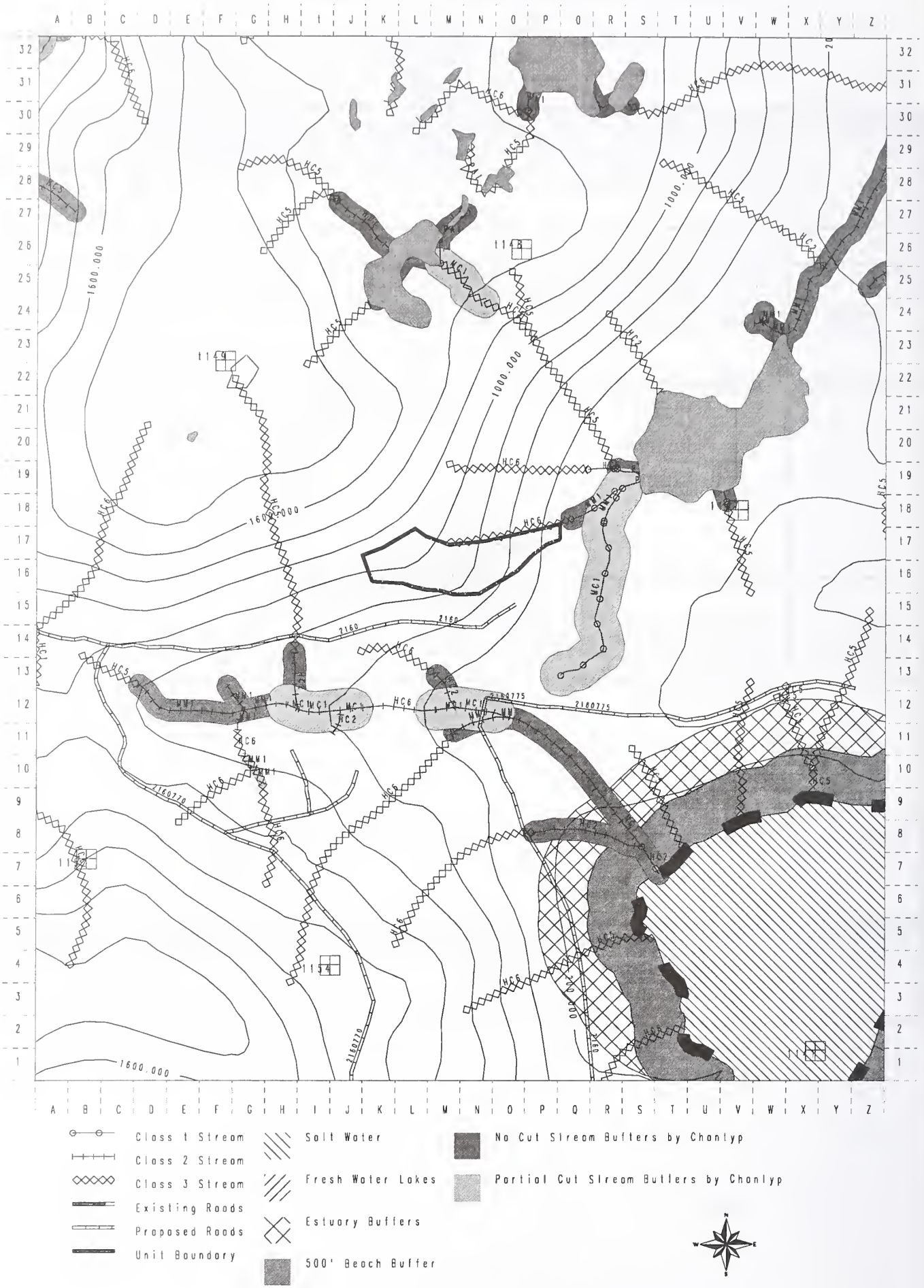
VCU-UNIT#: 679-503 ACRES: 19 VOL: 257 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-85 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: high windthrow risk, high elev. Productivity of site is moderate. Partial cut buffer. Adjacent to state selection. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to equipment limits. Difficult terrain - potential blind leads throughout unit. Verify feasibility and modify unit bdry as required. Profiles needed. Within designated old growth reserve.
J. Oien 5/96	ROADS: No concerns.
R.Johnson. 10/12/95	SOILS/WATERSHED: Helicopter portion of unit 679-320. Partial cut with helicopter yarding to avoid rock faces and rock outcrops throughout unit (BMP 13.9). Believe unit should extend downslope from elevation shown on unit card. Avoid drainage N boundary, and delete lands below 950' on E facing ridge adjacent to this drainage (BMPs 12.5, 12.6a, 13.5, 13.16; TLMP 1991). E portion unit deleted for State selection. See unit card for 679-320 for additional information.
K. Buckley, 8/96	FISHERIES: GIS review determined possibly one class III orange/ white needed protection. Field review will be necessary if unit is selected for harvest.
M.Pacheco 7/6/95 M.Dillman 10/96	WILDLIFE: Deer sign and game trails seen throughout unit. This unit is within an old growth reserve so was not surveyed in 1996. If current policy changes and this unit is harvested, wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested wildlife will need to survey the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Diameter limit - helicopter system, leave all species less than 16" DBH. Partial cut avoiding rock faces and rock outcrops. Avoid drainage on north boundry, and lands below 950 feet on east facing ridge adjacent to this drainage.

Chasina Study Area Interim Layout NOI Unit 679-503

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Warfield on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

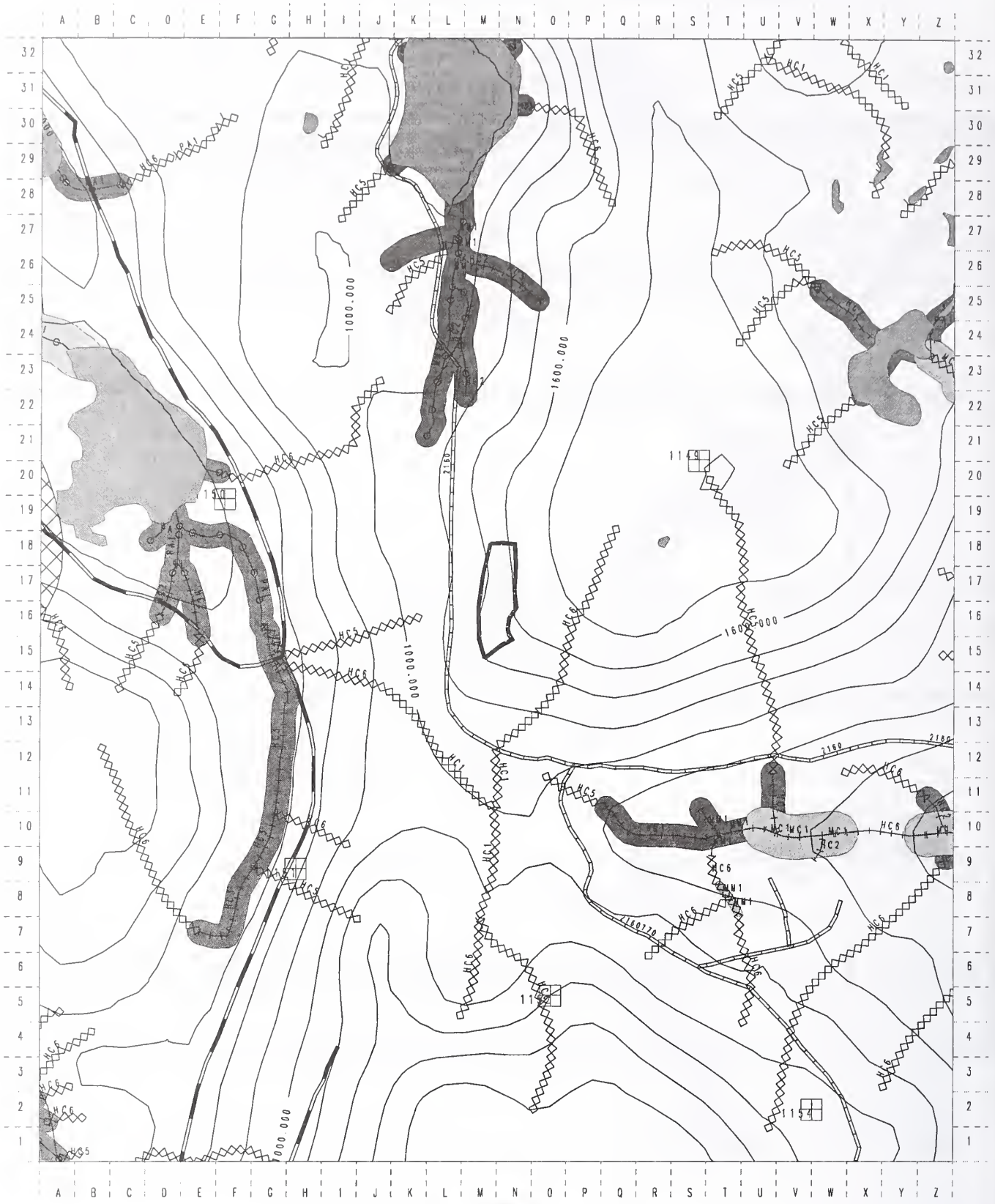
VCU-UNIT#: 679-504 ACRES: 7 VOL: 126 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-44,45 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: low windthrow risk, high elev. Within designated old growth reserve. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to 679-321 equipment limitations. Productivity of site is low. Maintain setting width between units. Stand spacing variable with clumps of large trees.
J. Oien 5/96	ROADS: No concerns.
R.Johnson. 6/96	SOILS/WATERSHED: Portion of 679-321 above cliff made into helicopter unit . Soils mapped 6 and small amount 4C E edge. Possible deletion greater than 41% McGilvery and MMI4 (BMP I3.5; TLMP 1991). See unit card 679-321 for additional information.
K. Buckley 7/96	FISHERIES: Office review determined no fisheries concerns in this unit.
C.Tighe 8/96	WILDLIFE: Unit 679-504 is the helicopter portion of 679-321. This unit is within a desiginated old growth reserve so wildlife did not survey in either 1995 or 1996. If current policy changes and this unit is harvested, wildlife recommends leaving live trees and snags where possible to maintain habitat structure and snag density, and will need to survey the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Group selection - helicopter group selections, 3-4 groups of I acre in size groups. Select groups away from existing slides. Leave half of unit acreage intact for resource protection.

Chasina Study Area Interim Layout NOI Unit 679-504

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portiol Cut Stream Bullers by Chantyp

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Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

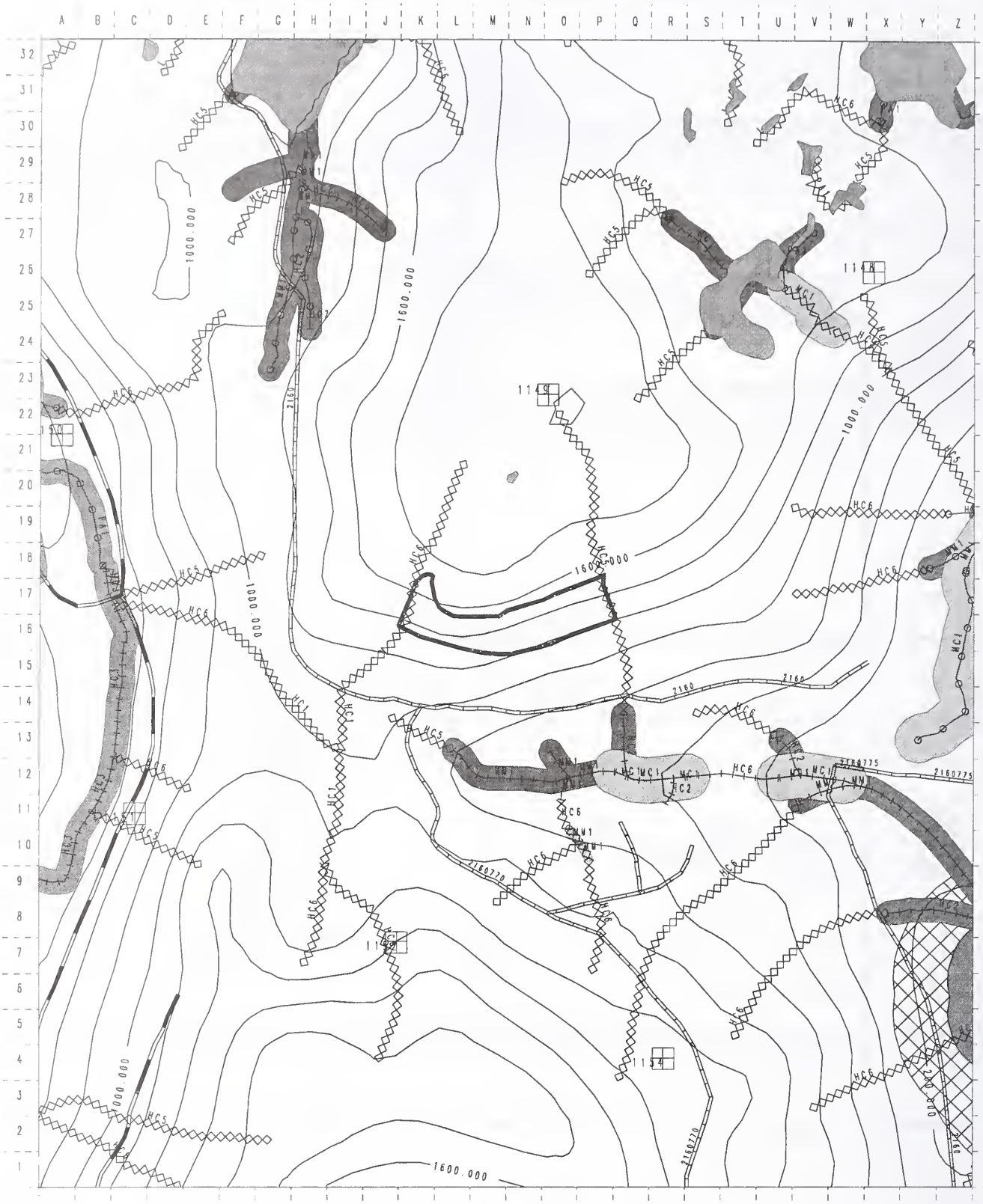
VCU-UNIT#: 679-505 ACRES: 17 VOL: 306 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-44,45 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: high windthrow risk, high elev. Within designated old growth reserve. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to equipment limits (679-323). Productivity of site is low. Maintain setting width between units. Uneconomic, low volume area near top of stand.
J. Oien 5/96	ROADS: No concerns.
R.Johnson. 6/96	SOILS/WATERSHED: Upper portion 679-323 converted into helicopter unit. Soils only partially mapped, 4C and 33D, forested wetland and MMI3. Silviculture review notes steeper slopes, rock faces, cliffs, McGilvery. Possible deletion for MMI4 and McGilvery (BMP 13.5; TLMP 1991). Protection streams and additional information unit card 679-323.
K. Buckley 7/96	FISHERIES: Office review identifies potential for a class III orange/ white and a class IV green/ white. Orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). Green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the site (BMP 13.16).
M.Pacheco 7/6/95 M.Dillman 7/96	WILDLIFE: Unit 679-505 is the helicopter portion of unit 679-323. Game trails throughout unit. This unit is within an old growth reserve so was not surveyed by wildlife in 1996. If current policy changes and this unit is harvested, recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if harvested wildlife will need to survey the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Diameter limit - helicopter system, leave all species less than 26" DBH.

Chasina Study Area Interim Layout NOI Unit 679-505

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer
No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Warfield on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 679-506 ACRES: 6 VOL: 135 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-145 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: high windthrow risk. Retain stand structure for wildlife where feasible. Productivity of site is moderate. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to equipment limitations (679-467). Uneconomic, low volume area near top of stand. Field checking alternative regeneration methods.
J. Oien 5/96	ROADS: No concerns.
Field D. J .Landwehr 8/23/95 EIS R .Johnson	SOILS/WATERSHED: Portion above cliff in 679-467 made into helicopter unit to obtain full suspension recommended for lands above cliff, where slopes exceed 75% (BMP 13.9).
K. Buckley 7/96	FISHERIES: Stream 3 is a class III green/ white that requires directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate, M.Pacheco 6/21/95 M.Dillman 7/96	WILDLIFE: 679-506 is the helicopter portion of 679-467. Deer sign seen in unit. This unit identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Wildlife did not survey this unit during 1996. Unit 679-467 was surveyed in 1996 but not the portion that is to be helicoptered due to steepness. The steepness of this unit was over that called for in the current goshawk protocols.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Group selection - helicopter group selections, 3 groups of 1 acre each in size groups.

Chasina Study Area Interim Layout NOI Unit 679-506

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

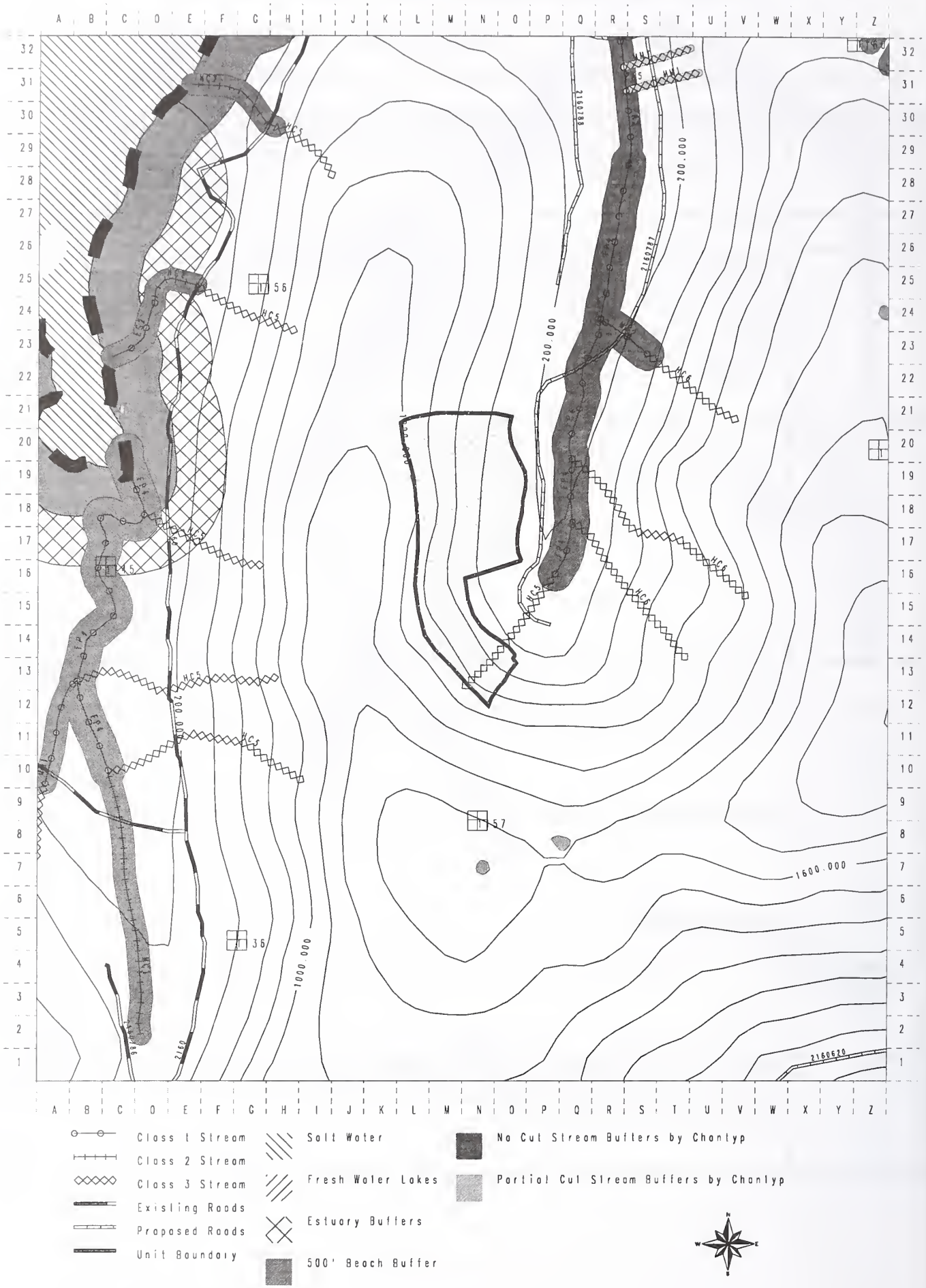
VCU-UNIT#: 679-507 ACRES: 55 VOL: 1000 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-136 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk, mod. elev. Productivity of site is low / moderate. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection (679-475). May be reduced greatly dew to instability. Suspension requirements (see soils or fish).
	ROADS:
R. Johnson. 10/19/95	SOILS/WATERSHED: Unit 679-475 converted to helicopter yarding. Below 500' soils are primarily Tolstoi and colluvial McGilvery, with Remedios and lithic Shakan. Slopes generally less than 75%, although still inclusions rock faces, rock outcrops, and slopes much as 110% particularly on N end. Partial suspension for MMI3, McGilvery, and inclusions (BMP 13.9; TLMP 1991). Zone 500 to 1000' still Tolstoi and colluvial McGilvery with lithic Shakan, but slopes averaging 75 - 90% with rock outcrops and rock faces, rock slides and sluice outs, seeps, blowdown, MMI4, younger second growth. Marginal area to log but partial cut with harvest excluding rock faces and outcrops an option with helicopter, if not delete this zone (BMPs 13.5, 13.9, TLMP 1991). Deleted above 900 to 1000' where rock faces nearly continuous with McGilvery and lithic Shakan MMI4 (BMP 13.5; TLMP 1991). Drainage near S end O&W; three G&W in unit, and G&W on N boundary (BMP 13.16).
K. Buckley, M. Solomon, 6/21/96	FISHERIES: Stream 1 is a class III orange/ white that requires a slope break plus 25' buffer (BMP 13.16). Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 4 is a class III orange/ white. The class III orange/ white require directional falling, and split yarding or full suspension (BMP 13.16). The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman, J.Wrate 7/11/95 C.Tighe, B.Johnston, A. Mueller 6/27/96	WILDLIFE: This unit is the helicopter portion of unit 679-475. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Rocky unstable ground, landslides, blowdown. Alders scattered throughout unit.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Diameter limit - helicopter system, leave all species less than 24" DBH. O&W streams require DF, full over or SY and cleaning of introduced debris immediately . G&W streams requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area.

Chastina Study Area Interim Layout NOI Unit 679-507

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Werfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

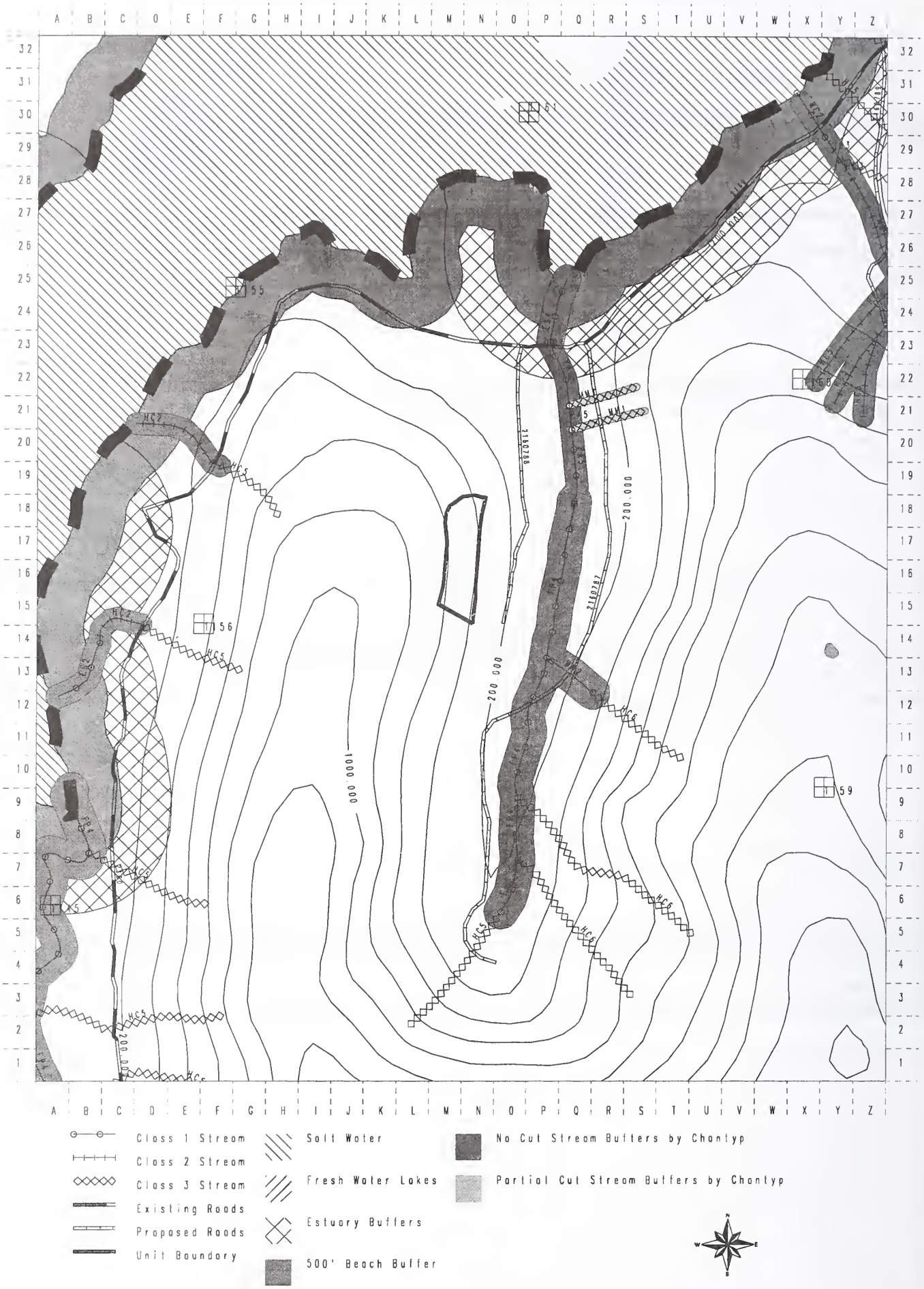
VCU-UNIT#: 679-508 ACRES: 9 VOL: 360 MBF ALTERNATIVES: 3,4,5,6

PHOTO YR/#: 91-490-137 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk. Productivity of site is high. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection (679-477). Suspension requirements (see soils or fish). Buffers (see fisheries). Option: helicopter whole unit.
J. Oien 5/96	ROADS: No concerns.
R. Johnson. 8/02/95	SOILS/WATERSHED: Upper portion of unit 679-477 converted to helicopter unit. Soils primarily McGilvery and rock faces, with Tolstoi, Traitors, Helm, and disturbances below rock faces. Slopes generally greater than 75%, but flatter on benches between rock faces. Marginal unit, but partial cut around rock faces option with helicopter, if not deleted (BMP 13.9). Upper boundary may be low volume forested wetland, although this above elevation shown on unit card. O&W class III on S boundary (BMP 13.16). Most other drainages off rock faces in unit and are non-streams.
K. Buckley 7/96	FISHERIES: South boundary stream is a class III orange/ white that requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16).
D.Parker, M.Pacheco 6/16/95 M.Dillman 7/96	WILDLIFE: This unit is the helicopter portion of 679-477. Game trails seen in unit. Alder seen in unit as well. This unit was not visited in 1996. Unit 679-477 was surveyed in 1996 see that unit card for more information. The 679-508 portion of this unit was not surveyed because it was above the steepness requirements called for in the current goshawk protocols.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96 R .Johnson, 8/02/95	PRESCRIPTION: Partial cut around rock faces. Drop for uneconomical timber and extremely steep slopes.

Chasino Study Area Interim Layout NOI Unit 679-508

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1998

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 680-310 ACRES: 27 VOL: 353 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '91-390-225 1/4 QUAD: KTN B-6 SE 1/4 LOGGING SYSTEMS: RS/HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68002-78, low windthrow risk, portion downhill yarded. Productivity of site is low. Uneconomic, low volume area between and surrounding portions of unit. If road continues south will need to spur to southern section of unit. Anticipate planting 14 acres of Alaska yellow cedar to maintain composition. Partial cut buffer.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%) with 86 CD (Kaikli - Grindall 5-60%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). Fisheries reported and deleted area S end cliffs and McGilvery (TLMP 1991). Partial suspension for any remaining McGilvery. Silviculture deleted and added to avoid low volume (BMP 12.5). Concern whether adequate tail holds and anchors for suspension. Fisheries buffers for streams and lakes (BMPs 12.6, 12.6a, 13.16). Defer harvest on Kaikli soils (TLMP 1996).
K. Buckley, M. Becker, 8/29/95	FISHERIES: Lake near unit need 100' no cut/ 400' partial cut buffers (BMP 12.6). Stream 1 is a class III orange/ white. Stream 2 is a class II blue/ white that will require a 120' TTRA buffer (BMP 12.6). Stream 3 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 4 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). Stream road crossings will require fish passage and timing (BMP 14.14). McGilvery soils and pistol butted trees noted in unit.
A.Mueller, B.Johnston 7/19/96	WILDLIFE: Deer pellets and beds, game trails, and bear scat seen throughout area. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit did not rate as a high priority area for goshawks and so was not surveyed during 1995. The habitat did not meet the habitat requirements in the current goshawk protocols.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut, leave cedar seed trees. Helicopter south piece, partial cut east 1/2 of north piece, partial cut NE part of center piece. Partial suspension required for soils protection. Not sure there are adequate tail holds and anchors to achieve suspension.

Chasina Study Area Interim Layout NOI Unit 680-310

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W
E

Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

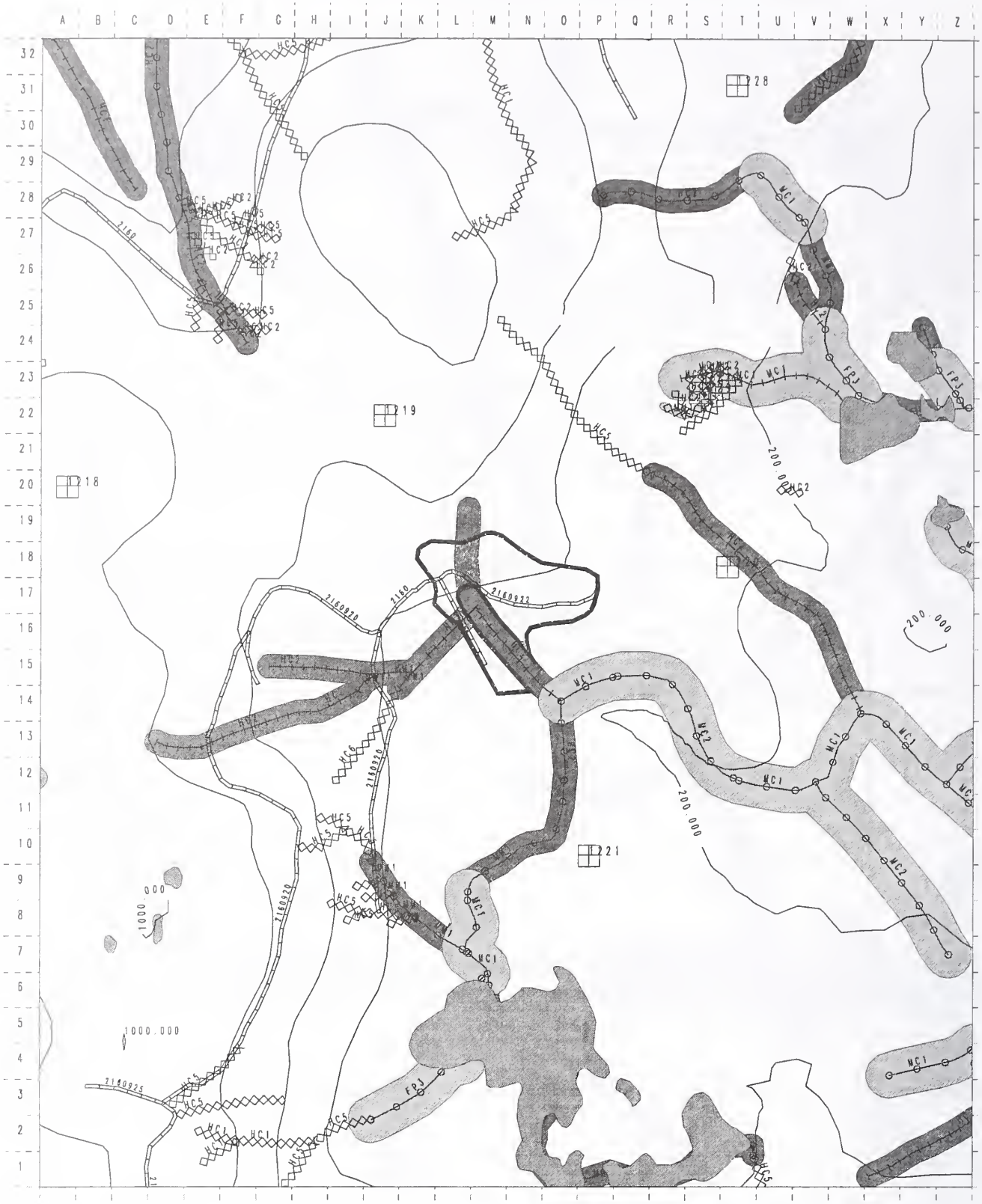
VCU-UNIT#: 680-317 ACRES: 25 VOL: 423 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-390-224 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS, SH

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68002- low windthrow risk. Productivity of site is moderate. Dropped uneconomic, low volume area surrounding, to the south and east of creek. Maintain setting width between units. Shovel yard 1/3 of unit.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 31C (Wadleigh 5-35%) with 550C (StNicholas - Kaikli 5-35%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). Silviculture deleted S end for low volume (BMP 12.5). Stream protection per fisheries(BMP 13.16). Third order watershed (BMP 12.1). Maintain standards for slope, topography, walk on waste wood, crossing drainages, spur roads, and turns for shovel yarding per BMP 13.9 .
K.McCartney, K.Kitchel, S.Deck 6/18/96	FISHERIES: Stream 1 is a class II blue/white TTRA that requires a 200' buffer (BMP 12.6). The upper reach of this stream becomes a class III orange/white system. Stream 2 is a class IV green/white system. Stream 3 is a class III orange/white that flows directly into stream 1. Stream 4 is a class IV green/white tributary to stream 1. During timber harvest, the class III orange/white streams require directional falling, split yarding or full suspension, and the immediate removal of introduced debris (BMP 13.16). The green/white streams require directional falling, split yarding (where practical) or partial suspension, and the removal of introduced debris before the yarder leaves the area or by the end of the operating season (BMP 13.16).
C.Tighe, B.Johnston, A. Mueller 6/14/96	WILDLIFE: Deer sign (beds, pellets) seen. Game trails and bear scat seen in unit as well. One dead deer found in close proximity to unit. Fisheries crew reported seeing a mouse-like mammal along creek. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit was not surveyed during 1995 due to the fact that the habitat did not meet the volume class requirements in the current goshawk protocols.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut. Partial suspension required, and shovel yarding.

Chasina Study Area Interim Layout NOI Unit 680-317

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Warfield on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 680-330 ACRES: 68 VOL: 1020 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '72(53)-1872-33 1/4 QUAD: KTN A-6 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68002- , low windthrow risk, mod. mistletoe present. Productivity of site is low. Partial cut buffer. Adjacent to private harvesting. Maintain setting width between units surrounding. Anticipate planting 20 acres of Alaska yellow cedar to maintain composition. Very scrubby at north end.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 24AC and 24D (KaikIi 0-60%), with 62 (Karheen - McGilvery 0-70%). Partial suspension for forested wetlands and McGilvery (BMPs I2.5, 13.9; TLMP I99I). Appears steeper and better trees to S, center and NW of Sern unit. Potential MMI3 and more McGilvery; should be protected by partial suspension. N boundary of N unit above riparian (which largely already cut) (BMPs 12.6, I2.6a). Protection of streams per fisheries (BMPs 12.6, 12.6a, 13.16). Part in third order watershed (BMP 12.1). Defer harvest on Kaikli and Karheen soils (TLMP I996).
D. Kuntzsch, K. Buckley 8/95	FISHERIES: Stream I is a class I blue/ white that requires a 200' TTRA buffer (BMP 12.6). Stream 2 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 becomes a class II blue/ white above the confluence with stream 7, it will require a 100' TTRA buffer up to this point (BMP 12.6). Above the confluence with stream 8, stream 3 is a class III orange/ white. Stream 5 is a class II blue/ white that will require a 120' TTRA buffer (BMP 12.6). Stream 6 is a class III green/ white. Stream 7 is a class III green/ white. Stream 8 is a class III orange/ white. Stream 9 is a class III green/ white. Stream I1 is a class III green/ white. Stream 12 is a class II blue/ white (mistakenly flagged orange/ white at road crossing) that will require a I20' TTRA buffer (BMP I2.6). The class III orange/ white streams require directional falling, and split yarding or full suspension. CIean streams of introduced debris immediately (BMP 13.16). The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16). There is potential trespass logging in this unit.
C.Tighe, B.Johnston 7/10/96	WILDLIFE: This unit is within one-half mile of a known bald eagle nest. Road construction must be accomplished in accordance with the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service must be documented. To provide for adequate snag density and distribution within the VCU, recommend leaving a 0.I acre or larger snag patch for each I0 acres of unit. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is an area of approximately 30 harvested trees, in NE corner of unit. This unit was not surveyed during 1995 due to the fact that the habitat did not meet the requirements called for in the current goshawk protocols. Maintain I000 foot estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain I0 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required.

Chosino Study Area Interim Layout NOI Unit 680-330

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

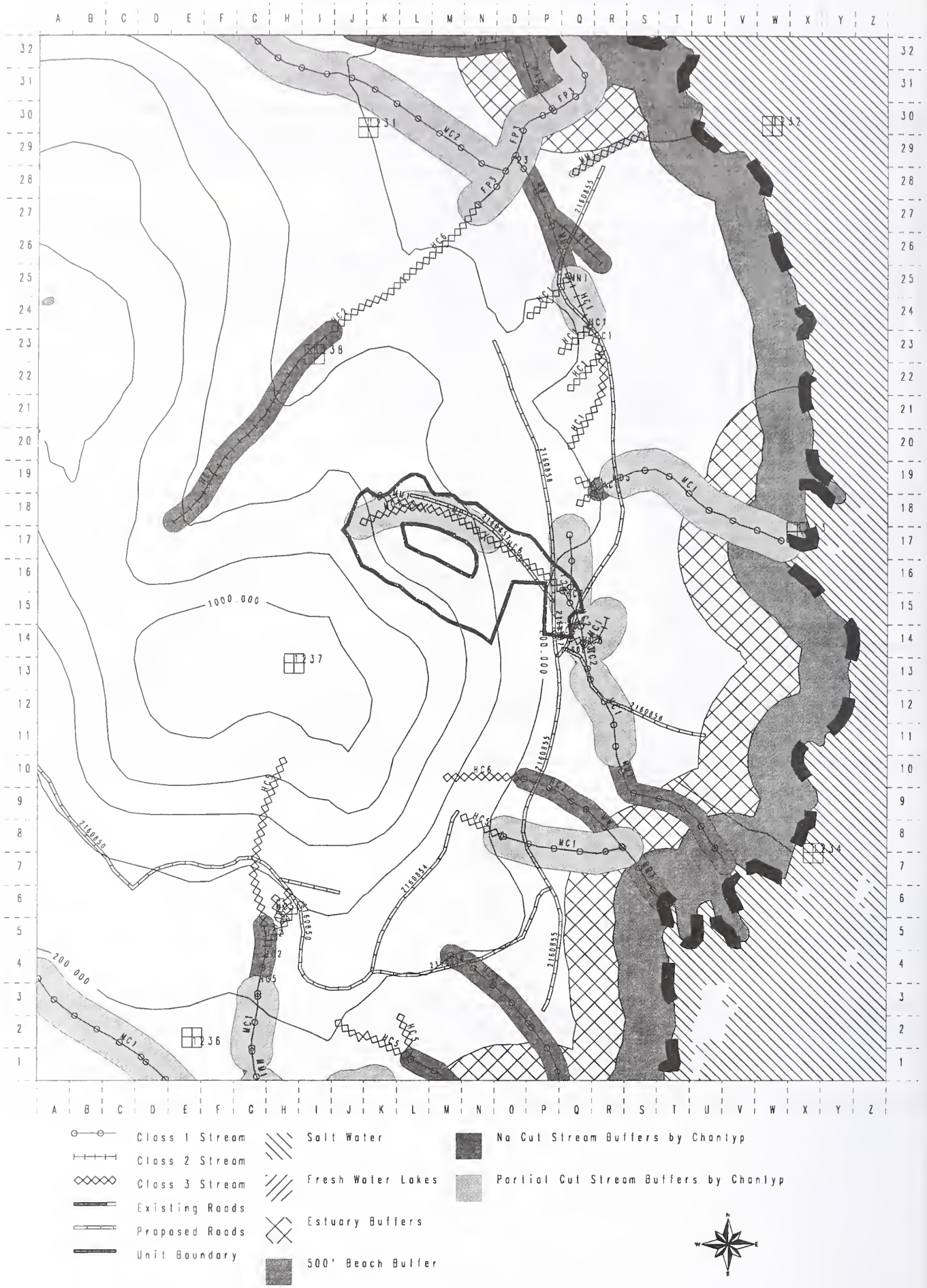
VCU-UNIT#: 680-333 ACRES: 43 VOL: 1091 MBF ALTERNATIVES: 3,6

PHOTO YR/#: '72(53)-32-1872/'91-390-218, 219 1/4 QUAD: KTN A-6 NW 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68002- High windthrow risk, portion downhill yarded. Partial cut buffer. Productivity of site is moderate. Adjacent to native cuts. Uneconomic, low volume area northeast & southwest. Maintain setting width between units. Difficult terrain - potential blind leads in upper slope. Verify feasibility and modify unit bdry as required. Profiles needed.
J. Oien 5/96	ROADS: Evaluate road location to determine which side of creek is best for logging.
field D.J.Landwehr, 8/9&15/95 EIS R.Johnson	SOILS/WATERSHED: Soils Kitkun, StNicholas, Tolstoi. Slopes 30-110%. Deleted portion southeast due very steep, MMI 4, McGilvery, blowdown (BMP 13.5; TLMP 1991). Remaining unit: Forested wetlands near streams, low areas, gentler slopes. High MMI soils in the unit. A small area of very high MMI soil at the head of several small streams in the southwest portion of the unit. This area is near the backline of the proposed unit. At a minimum the area at the head of the small stream needs good partial suspension or full suspension. If this area is inoperable with good suspension, then it should be deleted. Areas between the creeks in the north part of the unit may be suitable for shovel yarding (BMP 13.9). The remainder of the unit requires partial suspension. The two streams in the north part of the unit should be identified O&W with DF, SY or full suspension, and cleaning of introduced debris immediately (BMP 13.16). Five smaller streams joining main stream in flood plain require G&W protection. These streams require directional felling and split yarding where possible. Cleaning of introduced debris should occur by the end of the operating season or before the yarder leaves the area. Minimum good partial suspension, full preferred (BMP 12.6). Blowdown may be a consideration. Suggested addition deleted south end of unit. Road access feasible from N, if not as planned (BMP 14.2).
D. Kuntzsch, K. Buckley, 8/10/95 K. Kitchel, K. McCartney, M. Solomon, 7/10/96	FISHERIES: Stream 1 is a class III orange/ white that requires directional falling, and split yarding or full suspension. Clean stream or introduced debris immediately (BMP 13.16). Stream 13 is a class III green/ white that requires directional falling, and split yarding (where practical) or partial suspension. Clean green/white streams of introduced debris before the yarder leaves the area or by the end of the operating season (BMP 13.16). The NW corner of the unit has steep slopes that have many class III green/white streams flowing through it. The unit contains wet soils, blowdown, 85% slopes, & pistol butted trees. The additional acres that were added to the southern boundary of the unit are extremely steep (70-120% slopes) and there is a considerable amount of exposed rock faces and karst.
C.Tighe, B.Johnston 7/12/96	WILDLIFE: Unit contains some excellent goshawk habitat. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit was not surveyed during 1995. Apparently within the unit is an isolated patch of good habitat but overall the area did not meet the habitat requirements called for in the current goshawk protocols.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. O&W streams require DF, SY or full over, and cleaning of introduced debris immediately. G&W streams requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris within 24 hours. Partial suspension required. Full suspension heads of small streams southwest portion of unit. Dropped 29 acres due to scrub and steep slopes. Helicopter overstory removal > 25"- all species. Option clearcut downhill.

Chasina Study Area Interim Layout NOI Unit 680-333

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1998

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

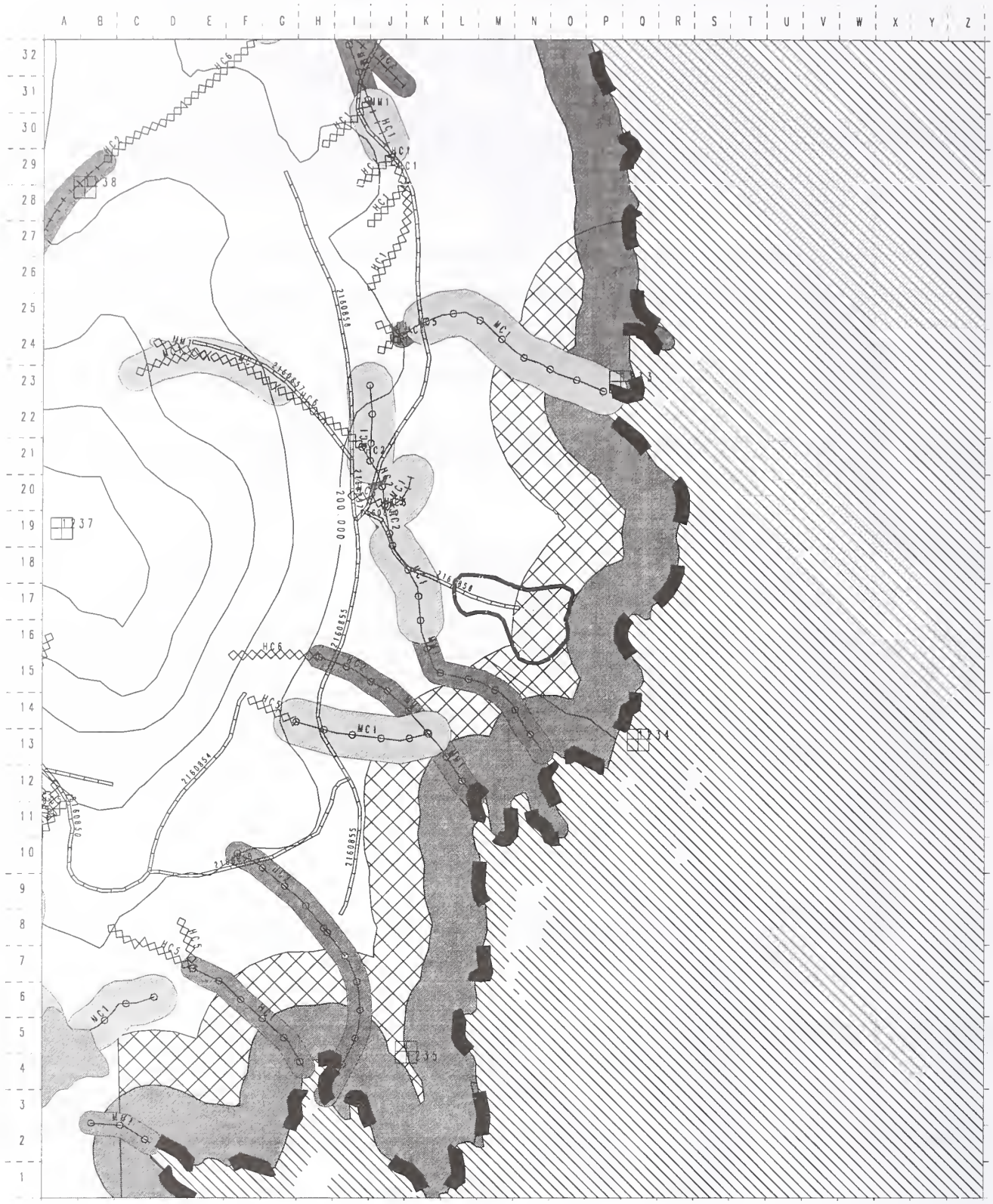
VCU-UNIT#: 680-335 ACRES: 11 VOL: 165 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '72(53)-1872-31/'91-390-218 1/4 QUAD: KTN A-6 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68002- low windthrow risk. Productivity of site is low. Addition to the east may have to be dropped for estuary buffer (partial cut option). Portions of unit to west and south dropped for low volume. Adjacent to second growth. Anticipate planting 5 acres of Alaska yellow cedar to maintain composition.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 8/10/95 EIS R.Johnson	SOILS/WATERSHED: Soils StNicholas and Tolstoi. Slopes 50-70%. Deleted west half with blowdown, second growth, muskeg. Added to east and northwest. Moderate to high MMI soils throughout the unit. A minimum of partial suspension is required (BMP 13.9). One small stream for G&W protection, don't use this stream as a yarding corridor (BMP 13.16). Small areas of forested wetland in the unit (BMP 12.5). Design unit boundaries for windfirmness, i.e. below topographical breaks. The 2160-856 road will cross bogs and forested wetlands to access unit (BMPs 12.5, 14.2). Road into unit appears feasible, and can apparently access top of knob.
D. Kuntzsch, K. Buckley, B. Freedman, 8/8/95 K.McCartney, K.Kitchel, M.Solomon, 7/10/96	FISHERIES: Stream 1 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Additional acres surveyed in 1996 and no new streams found.
B.Johnston, A.Mueller 7/26/96	WILDLIFE: This unit is within one-half mile of a known bald eagle nest. Road construction must be done in accordance with the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service must be documented. Unit may lose entire eastern 1/2 depending on final estuary buffer definition. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit was not surveyed by wildlife during 1995 due to the fact that the habitat did not meet the requirements called for in the current goshawk protocols. Unit may lose eastern portion depending on the final definition of an estuary buffer. Maintain 1000 foot estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. G&W streams requires DF, SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Eastern 1/2 of unit may be dropped depending on definition of estuary buffer. Minimum of partial suspension.

Chasino Study Area Interim Layout NOI Unit 680-335

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 681-304 ACRES: 64 VOL: 1111 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '72(53)-1872-31/'91(L46)-390-218 1/4 QUAD: KTN A-6 NW 1/4 LOGGING SYSTEMS: RS, SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windthrow risk. Productivity of site is low. Partial cut buffer. Adjacent to private selections. Difficult terrain - potential blind leads in several areas. Verify feasibility and modify unit bdry as required. Profiles needed. Road connections need work. High mistletoe infection.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 8/11/95 EIS R. Johnson	SOILS/WATERSHED: Soils StNicholas, McGilvery, Tolstoi, Kitkun. Slopes 30-120%. Deleted very steep, MMI 4 southwest corner (BMP 13.5); 1000 foot estuary buffer (BMPs 12.5, 12.6). A minimum of partial suspension is required throughout the unit due to high MMI soils, McGilvery soils, and forested wetlands (BMPs 12.5, 13.9). A small area of full suspension helicopter yarding is needed along the north boundary to protect young regeneration. The backline in the northeast and central portion of the unit should be located at the base of the first cliffs south of old landslide to avoid MMI 4 and cliffs (BMP 13.5). Two potential fish streams in the northeast corner of the unit and one O&W stream in the west end of the unit. Three smaller streams for G&W protection (BMP 13.16). Add on west of big cliff helicopter selective harvest to protect regen following blowdown. Potential for blowdown. Road appears feasible, except climb to top of SW knob up slope from estuary (BMP 14.2). Knob steep and big fill needed to make grade.
K. Buckley, D. Kuntzsch, B. Freedman, M. Greentree, 8/9/95	FISHERIES: Stream 4 is a class I blue/ white that requires a 120' TTRA buffer, and road timing (BMP 12.6, 14.14). Above the road crossing stream 4 is a class III orange/ white. Stream 5 is a class I blue/ white to a point just inside the unit boundary that requires a 100' TTRA buffer and fish passage/ timing (BMP 12.6, 14.14); the remainder of stream 5 is a class III orange/ white. Stream 10 is a class I blue/ white that requires a 120' TTRA buffer from the slope break (BMP 12.6). Stream 11 is a class III orange/ white. Stream 12 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The large water body south of the unit is an estuary that requires a 1000' buffer.
B.Johnston, A.Mueller 7/26/96	WILDLIFE: This unit is within one-half mile of a known bald eagle nest. Road construction must be accomplished in accordance with the Bald Eagle Protection Act and must comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service must be documented. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This was not a high priority unit for wildlife following the current goshawk protocol, due to habitat requirements, and as a result was not surveyed in 1995.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. O&W streams require DF, full over or SY, and cleaning of introduced debris immediately. G&W streams requires DF, SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Minimum of partial suspension. Full suspension helicopter yarding along north boundry. Backline northeast and center base of first cliffs south of all landslide. Selective harvest by helicopter for add on west of big cliff. Dropped acreage due to steep cliffs and scrub timber.

Chasina Study Area Interim Layout NOI Unit 681-304

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

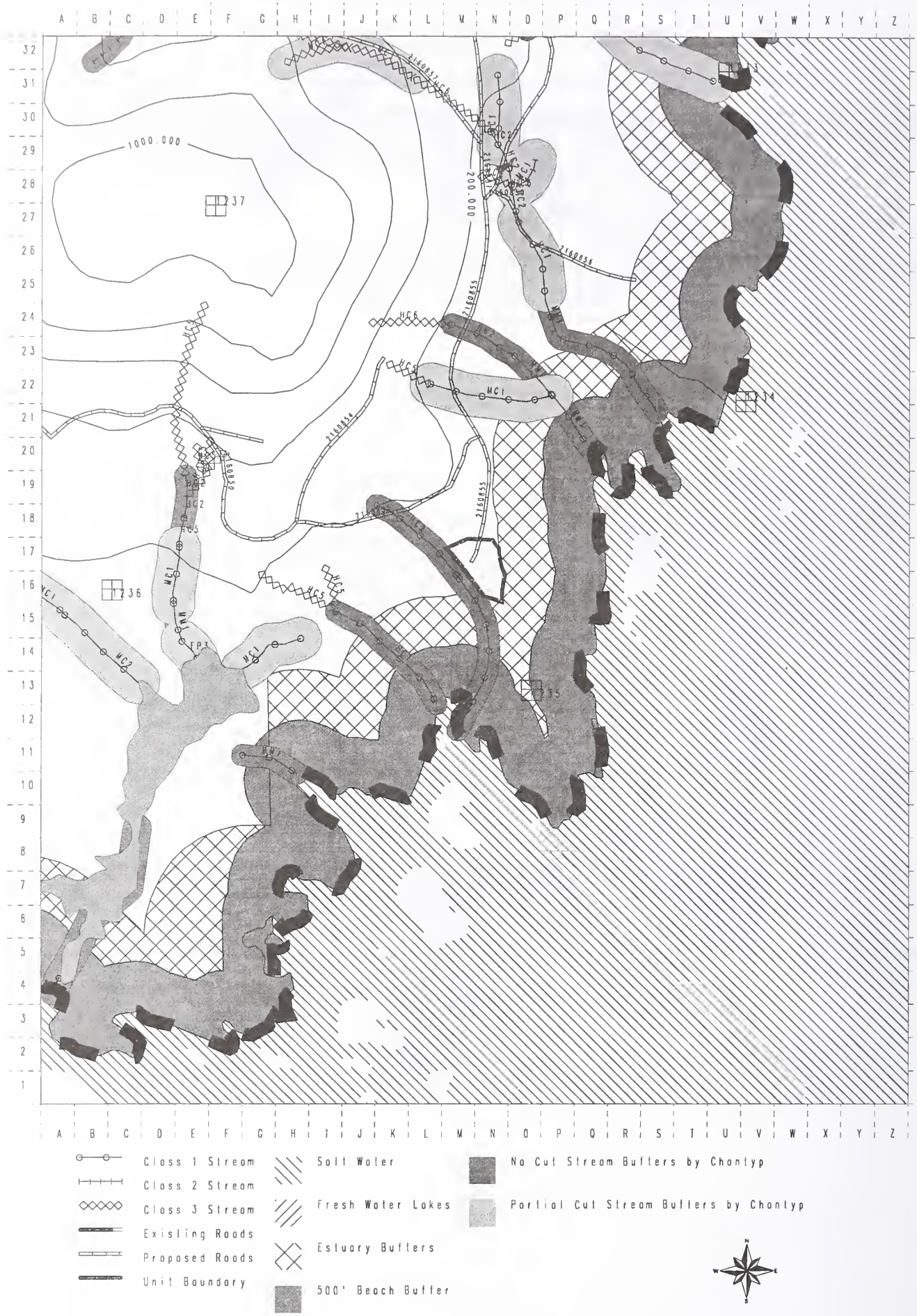
VCU-UNIT#: 681-308 ACRES: 5 VOL: 50 MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '72(53)-1872-31/'91(L46)-390-218 1/4 QUAD: KTN A-6 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68002- , low windthrow risk. Productivity of site is low. Partial cut buffer. Uneconomic, low volume area surrounding. Adjacent to estuary buffer. Dropped low volume area to the west and north. May not be economical if unit is at the end of a road.
J. Oien 5/96	ROADS: No concems.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 82D (McGilvery - Kitkun 35-60%) and 62 (Karheen - McGilvery 0-70%). Partial suspension for forested wetlands and McGilvery (BMPs 12.5, 13.9; TLMP 1991). Silviculture deleted W portion of unit, and moved east portion to S because low volume wetlands (BMP 12.5). McGilvery and steep slopes reported in E portion. Protection of stream between two parts of unit by fisheries (BMPs 12.6, 12.6a, 13.16). Defer harvest on Kitkun and Karheen soils (TLMP 1996).
K. Buckley, D. Kuntzsch, B. Freedman, M. Greentree, 8/9/95	FISHERIES: Stream 1 is a class I blue/ white stream that requires a 120' TTRA buffer (BMP 12.6).
C.Tighe 8/96	WILDLIFE: This unit is within one-half mile of a known bald eagle nest. Road construction must be accomplished in accordance with the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service must be documented. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat strucutre and snag density. This was not a priority unit for wildlife due to habitat requirements according to current goshawk protocol and as a result it was not surveyed in 1995 or 1996. Maintain 1000 foot estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 681-308

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portion Cut Stream Buffers by Chantyp

Created by Sally Warfield on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

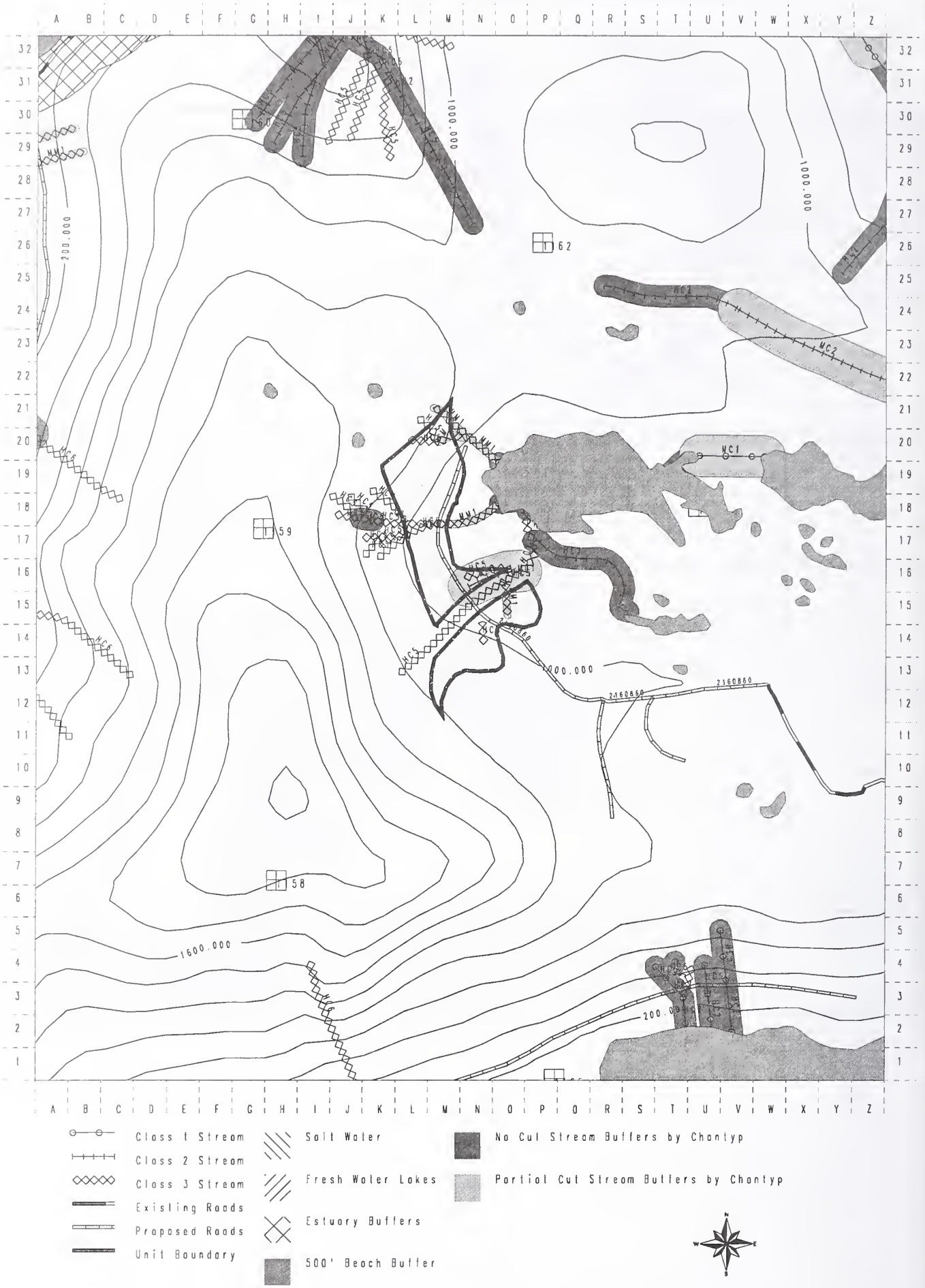
VCU-UNIT#: 681-316 ACRES: 36 VOL: 720 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-144 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68101-111, high windthrow risk, portion downhill yarded. Unit changed to provide proportionality of volume classes. Uneconomic, low volume area surrounding. Productivity of site is low / moderate. Partial cut buffer. Suspension requirements (see soils or fish). Maintain setting width between units. Keep unit below cliffs. Scrub buffer at the bottom. Option to road units 316 and 322 (private road connection). Road source at great distance.
J. Oien 5/96	ROADS: No concerns - needs soils input.
field D.J.Landwehr 9/20/95 EIS R.Johnson	SOILS/WATERSHED: Soils Tolstoi, StNicholas, Shakan, with Kitkun and McGilvery. Slopes 25-110%. Partial and full suspension required throughout the unit due to high MMI soils and many streams (BMPs 13.9, 13.16) About 15% forested wetlands. About 5 acres for helicopter yarding on the flat area above the cliff. The cable yarding backline should be placed at the base of the cliffs and very steep slopes on the west side of the unit. Approximately 4 acres on slopes greater than 75% gradient. Fourteen streams documented. Seven streams for O&W protection, and three for G&W protection (BMP 13.16). The close proximity of streams in the southwest portion of the unit may preclude directional felling and split yarding. This area may need to be deleted. Karst per geology. Potential add NW and W not feasible MMI 4. Third order watershed (BMP 12.1). Road into unit appears feasible pretty much as planned (BMP 14.2). Unit converted to helicopter yarding, should provide full suspension (BMP 13.9).
K. McCartney, J. Wrate, K. Buckley, 8/15/95	FISHERIES: Stream 1 is a class III orange/ white. Stream 2 is a class III orange/ white. Stream 3 is a class III green/ white. Stream 4 is a class III green/ white. Stream 5 is a class III green/ white. Stream 6 is a class III orange/ white. Stream 7 is a class III orange/ white (mistakenly flagged class II o/w). Stream 8 is a class III orange/ white. Stream 9 is a class III orange/ white. Stream 10 is a class III orange/ white. Stream 13 is a class III green/ white. Stream 14 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
C.Tighe 8/96	WILDLIFE: Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit did not rate out as a high priority unit for wildlife according to the current goshawk protocol for steepness and elevation and as a result it was not surveyed in 1995 or 1996.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Lower half of unit is moderate vulnerability karst. Partial suspension required within karst portion of unit as a minimum. LANDS:
T. Fifield 10/28/96	CULTURAL: The unit was surveyed in 1996 due to its proximity to a high sensitivity zone for the occurrence of cultural resources. No cultural resources were noted in the unit. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. O&W streams require DF, full over or SY, and cleaning of introduced debris immediately. G&W streams requires DF, SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Yard to private road system. "Unit added from preferred alternative due to proportionality based on acres."

Chasina Study Area Interim Layout NOI Unit 681-316

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

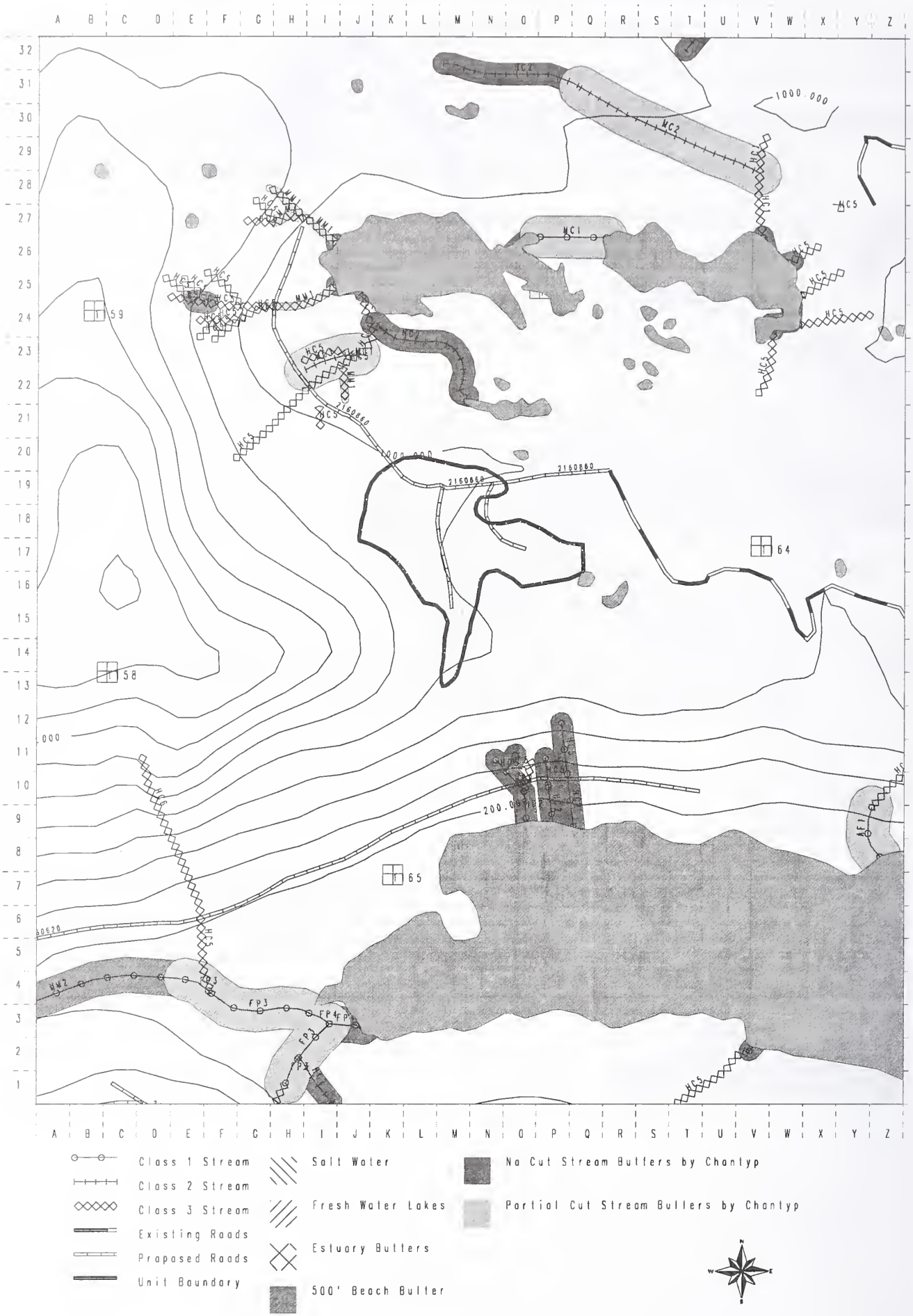
VCU-UNIT#: 681-322 ACRES: 48 VOL: 1440 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-143 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68101-107, low windthrow risk, portion downhill yarded. Unit changed to provide proportionality of volume classes. Productivity of site is moderate. Suspension requirements (see soils or fish). Maintain setting width between units. Option to road units 316 and 322 (private road connection). Rock source at a great distance.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 9/20/95 EIS R.Johnson	SOILS/WATERSHED: Soils Mitkof, Kupreanof, McGilvery, Ulloa, Sarkar. Slopes less than 40%. Partial suspension required to protect thin soils over karst in the east part of the unit (BMP 13.9). About 25% forested wetlands. About 40% karst. Several areas in the unit may be suitable for shovel yarding depending on the final road location. One stream should be designated O&W (DF, SY or full over, and clean of introduced debris immediately) (BMP 13.16). One stream along the north boundary for G&W protection (DF, SY or partial over, and clean before the end of the operating season). Three smaller streams do not warrant protection. Third order watershed (BMP 12.1). Road appears feasible (BMP 14.2). Unit converted to helicopter yarding, which should provide full suspension (BMP 13.9).
K. McCartney, D. Kuntzsch, J. Baichtal, K. Buckley, 7/27/95 K. Buckley, M. Solomon, 6/15/96	FISHERIES: Stream 1 is a class IV green/ white. Steam 2 is a class III orange/ white. Stream 3 is a class III orange/ white. Stream 4 is a class III orange/ white. Stream 5 is a class III orange/ white. Stream 6 is a class IV green/ white. Streams 2, 3, and 4 flow into a karst sink hole. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
C.Tighe 8/96	WILDLIFE: To provide for adequate snag density and distribution within the VCU, recommend leaving a 0.1 acre or larger snag patch for each 10 acres of unit. Wildlife recommends leaving live researve trees and snags where possible to maintain habitat structure and snag density. This unit did not rate out as a high priority unit for wildlife following the current goshawk protocol for steepness and elevation and as a result it was not surveyed during 1995 or 1996.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. About 40% of unit is underlain by moderate vulnerability karst. In the east end of the unit a 10' deep karst channel and sinkhole were located. A 100 foot no harvest buffer is required around the discrete features as per the standards and guidelines outlined in the RSDEIS for the TLMP. Partial suspension required on the remainder of unit underlain by karst. LANDS:
T. Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. O&W streams require DF, SY or full over, and cleaning of introduced debris immediately. G&W streams requires DF, SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. "Unit added from the preferred alternative due to proportionality based on acres." Dropped 4 acres of scrub timber - option to road through private road system.

Chasina Study Area Interim Layout NOI Unit 681-322

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

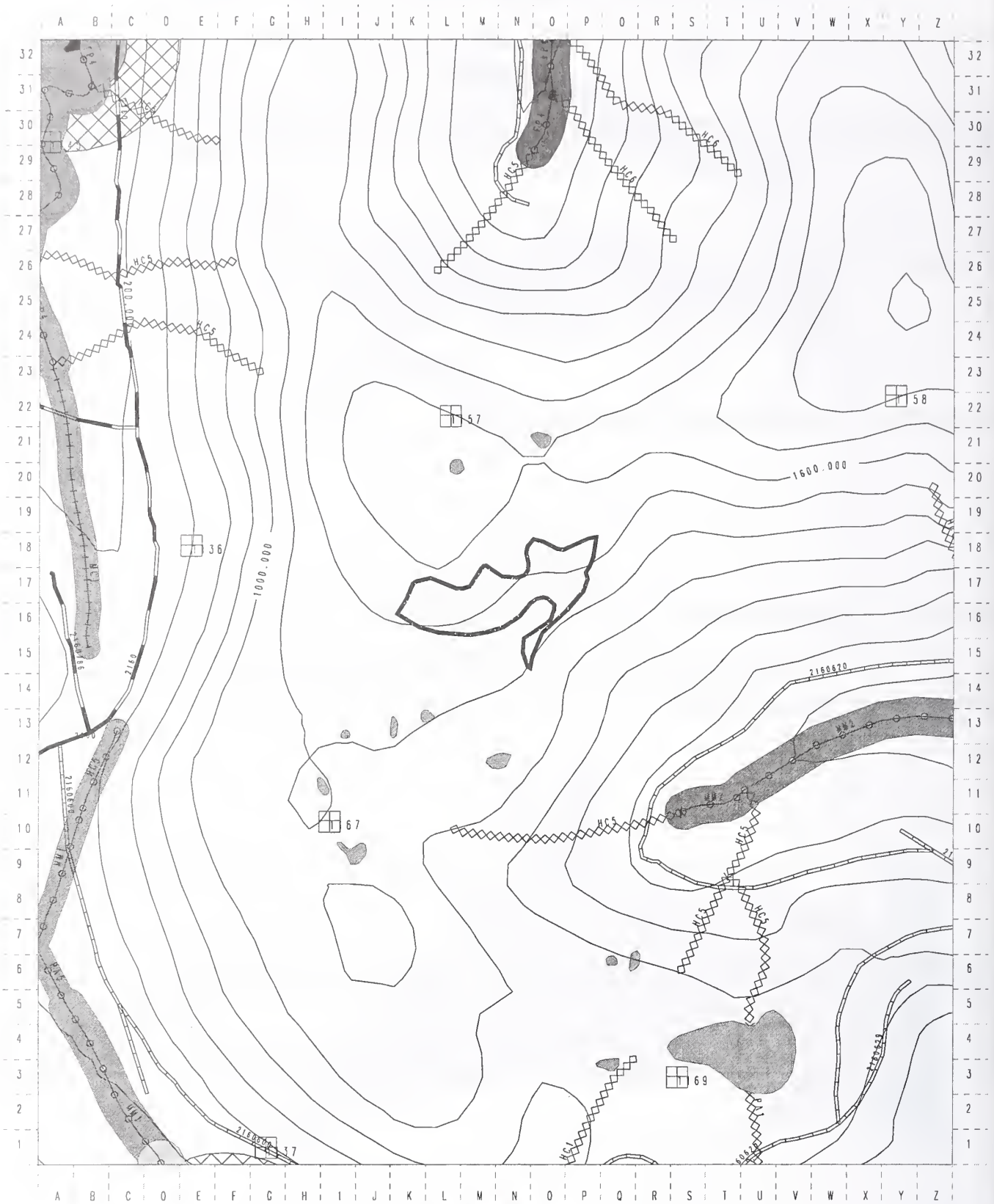
VCU-UNIT#: 681-323 ACRES: 21 VOL: 315 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-490-135 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-80, low windthrow risk. Productivity of site is low. Field checking alternative regeneration methods. Uneconomic, low volume area surrounding.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped primarily 29EF (McGilvery 60-100%), with 90D (Grindall - Kitkun 35-60%) and 4D (Helm 35-60%). Probable deletion for McGilvery (TLMP 1991). Possible low volume timber W half unit, may not be harvestable. Possible headwater stream E half unit needing protection (BMP 13.16). Probable stream center of unit, not needing protection. Only minor expansion to N possible, but nowhere else to move unit as top of ridge and edge of tree line. Probably not viable unit even with helicopter logging. Third order watershed (BMP 12.1).
K. Buckley, 7/96	FISHERIES: Office review identified no fisheries concerns in the unit.
C.Tighe 8/96	WILDLIFE: Wildlife did not survey this unit in 1995 or 1996. This unit is above the elevation criteria called for in the current goshawk protocol. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut.

Chastina Study Area Interim Layout NOI Unit 681-323

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
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Created by Sally Merfeld on November 01, 1998

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

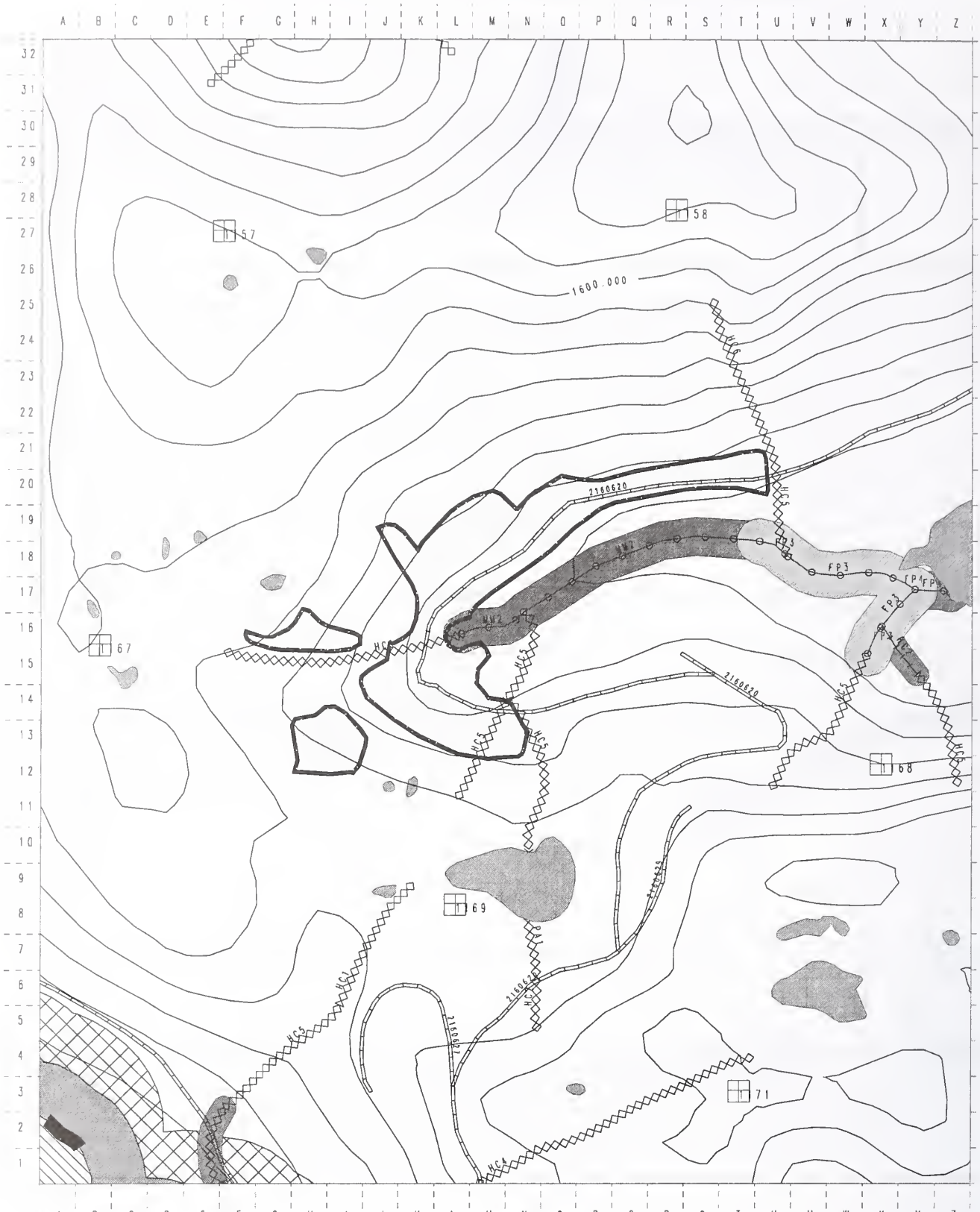
VCU-UNIT#: 681-330 ACRES: 79 VOL: 2370 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-490-134 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS/HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-85, high windthrow risk, portion downhill yarded. Within designated old growth reserve. Partial cut buffer. Maintain setting width between units. Productivity of site is moderate. Low value and cliff areas dropped for resource protection and economic feasibility. Difficult terrain - potential blind leads in western. Verify feasibility and modify unit bdry as required. Profiles needed. Road connection from north or south depending on alternative selected.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 10/26/95 EIS R.Johnson	SOILS/WATERSHED: Soils Kupreanof, Mitkof, Shakan, McGIlvery, StNicholas, Tolstoi, Kaikli, Kitkun. Slopes 30-130%. Deleting N, W, S for cliffs, class III streams, MMI 4, very steep, fish buffers, very steep McGilvery (BMPs 12.6a, 13.5, 13.16; TLMP 1991). Remaining unit: may still need to delete 5 A very steep McGilvery middle N. 20 to 25 A suitable. High MMI soils throughout the unit. About 4 acres on slopes greater than 75 percent. About 5A forested wetlands. A minimum of partial suspension required throughout unit (BMP 13.9). Twenty five streams were identified in the unit reconnaissance. Eighteen streams were identified for O&W protection (BMP 13.16). In two areas the streams are too close together to allow directional felling and split yarding. These areas should be deleted. Seven streams for G&W protection. Fish habitat is present in the lower reaches of many streams just outside the unit boundary. See fisheries section for appropriate buffer widths. Helicopter yarding may improve the feasibility of logging some of the suitable timber in the north and northeast end of the unit. Road location needs review, recommend from top. Third order watershed (BMP 12.1). Road location may be possible just outside fish buffer, but cliffs and convex slopes limit yarding distance less than 200' from road (BMPs 12.6a, 14.2). Road numerous crossings of streams on 60 to 75% slopes (BMPs 13.16, 14.14, 14.17). Access to SW portion unit possible from road for 681-338, but route needs to be investigated. Any road into unit needs review (BMP 14.2). Two western portions converted to helicopter yarding, which should provide full suspension (BMP 13.9).
	FISHERIES:
M.Dillman, B.Johnston 8/29/95	WILDLIFE: Rock bluffs throughout unit. Karst near Paul Lake. Deer sign seen in unit; bear sign seen near Paul Lake; three sandhill cranes seen/heard around lake. This unit is within a designated old growth reserve so was not surveyed in 1996. If current policy changes and this unit is harvested, recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if unit is harvested wildlife will need to survey the area prior to harvest.
T. Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96 D.J.L. & R.J. 10/95	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. O&W streams require DF, full over or SY and cleaning of introduced debris immediately. G&W streams requires DF, SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Minimum partial suspension. Delete 5 acres very steep McGilvery middle north. Delete area two streams too close to allow directional felling and split yarding. Helicopter yard north and northeast end. Portions to the west to be helicoptered.

Chosina Study Area Interim Layout NO1 Unit 681-330

Mapscale 1:15840 (4 inch to Mile)



- Class 1 Stream
- Class 2 Stream
- Class 3 Stream
- Existing Roads
- Proposed Roads
- Unit Boundary
- Salt Water
- Fresh Water Lakes
- Estuary Buffers
- 500' Beach Buffer
- No Cut Stream Buffers by Chanlyp
- Partial Cut Stream Buffers by Chanlyp

N W E S

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 681-332 ACRES: 34 VOL: 970 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-390-142 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-110, high windthrow risk, portion downhill yarded. Productivity of site is moderate. Partial cut buffer. Maintain setting width between units. Dropped top of unit (slides, etc.). Road connection could be from the private land to the east or Forest Service land from the south.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 9/21/95 EIS R.Johnson	SOILS/WATERSHED: Soil Sarkar, Tolstoi, McGilvery. Slopes 40-140%. Deleted above 500 feet due very steep, cliffs, landslides, MMI 4 (BMP 13.5). Remaining unit: A minimum of partial log suspension is required due to the presence of high MMI soils (BMP 13.9). Two streams should be designated O&W (DF, SY and clean of introduced debris immediately) (BMP 13.16). Two streams should be designated G&W (DF, SY, and clean before the end of the operating season). See fisheries section for a buffer prescription for Paul Lake (BMPs 12.6, 12.6a). Most of unit mixed karst. Third order watershed (BMP 12.1). Road appears feasible, but substantial portion outside unit not reviewed (BMP 14.2).
K. McCartney, J. Wrate, 8/16/95	FISHERIES: Paul Lake will require a 150' no cut/ 350' partial cut TTRA buffer (BMP 12.6). Stream 1 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). At 260' of elevation stream 1 changes to a class III orange/ white. Stream 2 is a class 1 blue/ white that requires a 120' TTRA buffer (BMP 12.6). At 320' of elevation the stream changes to a class III orange/ white. Stream 3 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 4 is a class III orange/ white. The class III orange/ white require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16).
A.Mueller, B.Johnston 7/18/96	WILDLIFE: This unit did not rank as a high priority unit for wildlife. The steepness of the unit is above that which is called for in the current goshawk protocol. It was not surveyed by wildlife in 1995 . Deer sign was noted in the unit. Down woody debris seen throughout unit. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Unit on interbedded marble and schist. Extremely steep slopes above approx. 500' elevation. Resurgences appear at about this elevation as well. Sinkhole in northeast corner of unit. High vulnerability karst above the 500 ' elevation and should be excluded from the unit as per the standards and guidelines outlined in the RSDEIS for the TLMP. Moderate vulnerability karst below 500' elevation, partial suspension required. LANDS:
T. Fifield 10/28/96	CULTURAL: This unit was surveyed in 1996 due to its proximity to a high sensitivity zone for the occurrence of cultural resources. Spring board stumps were noted in the unit. However, no significant cultural resources were encountered. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. O&W streams require DF, SY or full over, and cleaning of introduced debris immediately. G&W streams requires DF, SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Minimum partial suspension.

Chasina Study Area Interim Layout NOI Unit 681-332

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

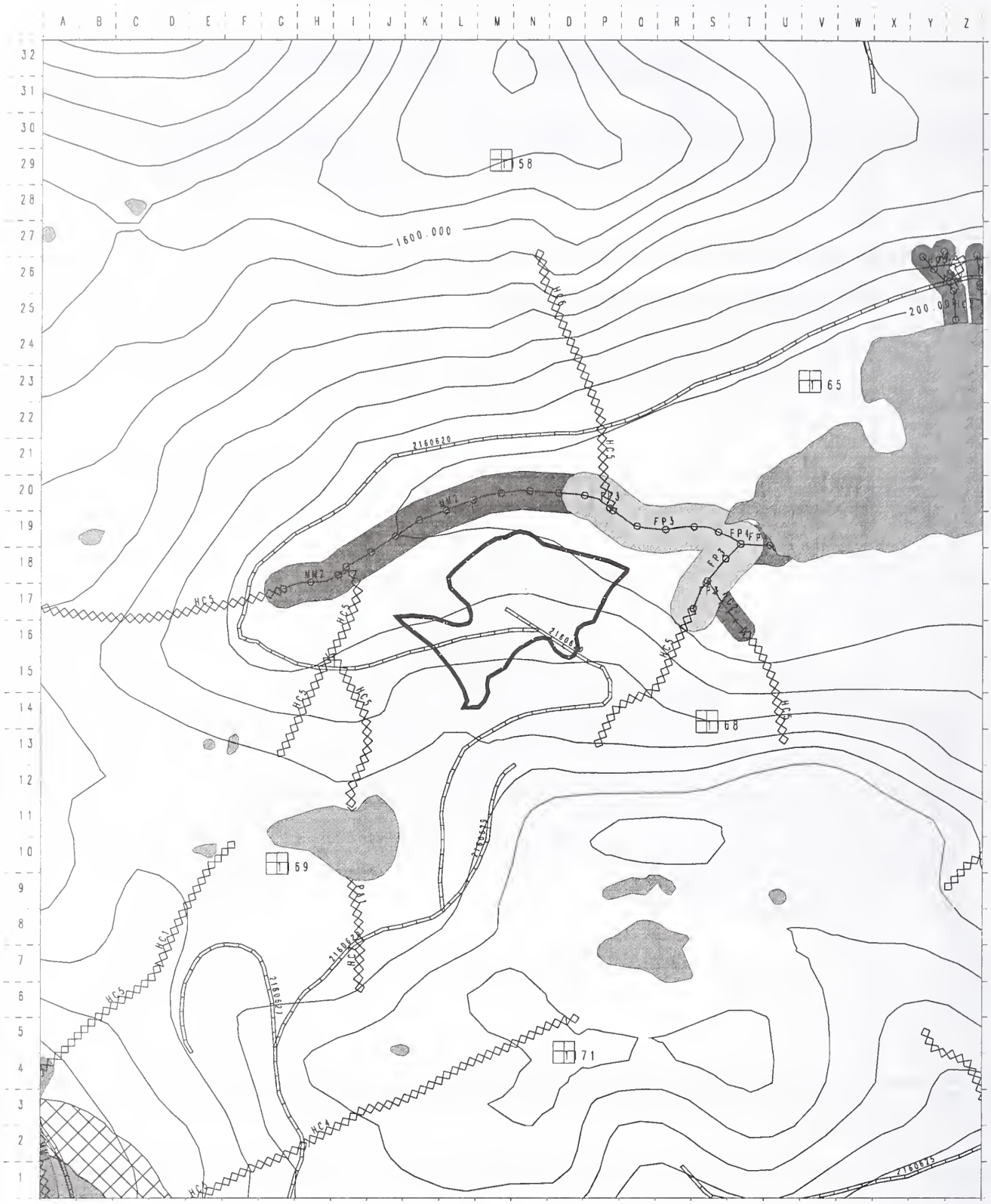
VCU-UNIT#: 681-337 ACRES: 34 VOL: 1700 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-490-134 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-85, high windthrow risk, portion downhill yarded. Within designated old growth reserve. Productivity of site is high. Road connection could be north or south depending on alternative chosen. Maintain setting width between units.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 48C (Helm - Kitkun 5-35%) and 1D (Vixen 35-60%). Partial suspension for portion forested wetlands. Appears better timber than typical wetlands. Appears steeper than mapped, possibly MMI3. Topography and cliffs, probable deletion on E. Probable cliffs and McGilvery; additional deletion on SW boundary. Probable partial suspension throughout unit forested wetlands, MMI3, McGilvery (BMPs 12.5, 13.9; TLMP 1991). Lower boundary above riparian on stream flowing into Paul Lake (BMPs 12.6, 12.6a, 13.16). Probable other stream(s) in unit needing protection (BMPs 12.6a, 13.16). Third order watershed (BMP 12.1). Defer harvest on Kitkun (TLMP 1996).
D.Kuntzsch, 7/96	FISHERIES: Protect water quality streams per soils instructions. Office review determined streams north and east of the unit as possible fish habitat, but the current unit boundaries should not impact buffers on these streams.
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve and was not surveyed by wildlife in 1995 or 1996. If current policy changes and this unit is harvested, recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if unit is harvested wildlife will need to survey the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: This low sensitivity unit was surveyed in 1996. No cultural resources were recorded. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 681-337

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

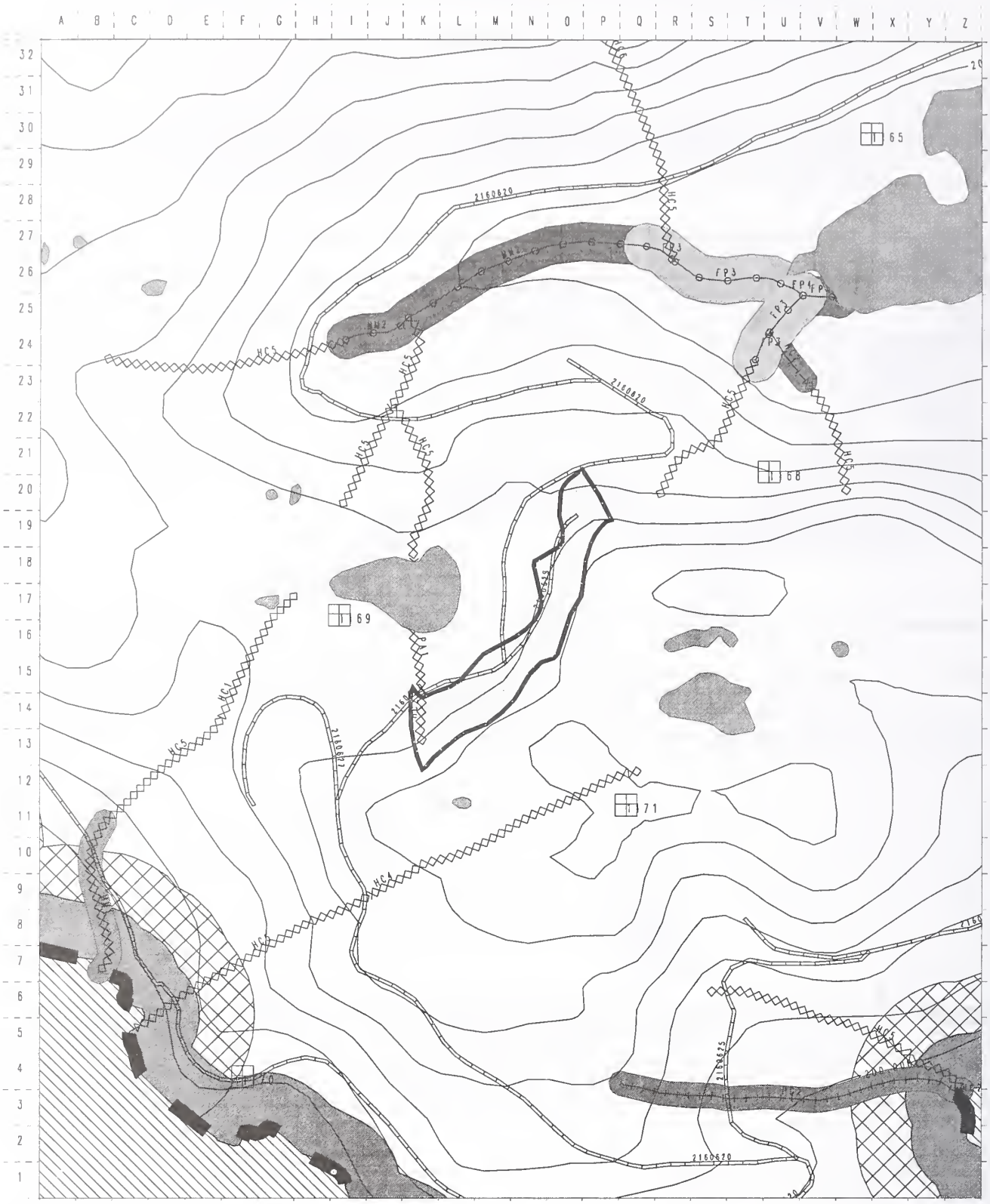
VCU-UNIT#: 681-338 ACRES: 28 VOL: 1120 MBF ALTERNATIVES: 6

PHOTO YR/#: '91-490-134 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-124, high windthrow risk, portion downhill yarded. Within designated old growth reserve. Productivity of site is high. Maintain setting width between units. Uneconomic, low volume area to the west. Drop top due to cliffs. Roading N. or S. is an option. Helicopter may increase size of unit to the east.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 10/27/95 EIS R.Johnson	SOILS/WATERSHED: Soils Tolstoi, McGilvery, Shakan, Wadleigh, Karta, Kaikli. Slopes 45-100%. Deleted cliffs and MMI 4 below them at 1000-1200 feet (BMP 13.5); NW corner for cliffs, low volume wetland and McGilvery (BMP 12.5; TLMP 1991). Remaining unit: Partial suspension is required throughout the unit due to the presence of high MMI soils and forested wetland bottom boundary (BMPs 12.5, 13.9). The backline for cable yarding should be located at the base of the cliffs and bottom of the small brushfields. Four streams for O&W protection (DF, SY, and immediate removal of introduced debris) (BMP 13.16). Three streams for G&W protection (DF, SY, and clean before the end of the operating season or before the yarder leaves the area). The density of water quality streams in the northwest portion of the unit may limit operability in that area. Third order watershed (BMP 12.1). Road in timber cross 40 to 70% slopes underlain by till and bedrock. Preliminary road line needs review because potential landslides (BMPs 13.5, 14.2, 14.3, 14.6, 14.7, 14.12).
D.Kuntzsch, 7/96	FISHERIES: Protect water quality streams per soils instructions. Office review identified no additional fisheries concerns.
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve and as a result was not surveyeded by wildlife in either 1995 or 1996. If current policy changes and this unit is harvested, recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if unit is harvested wildlife will need to survey the area prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. O&W protection (DF, SY or full over, and clean introduced debris immediately) (BMP 13.16). G&W protection (DF, SY or partial over, and clean before the end of the operating season). Partial suspension required. Backline base of cliffs and bottom of brushfields.

Chastina Study Area Interim Layout NOI Unit 681-338

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Warfield on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

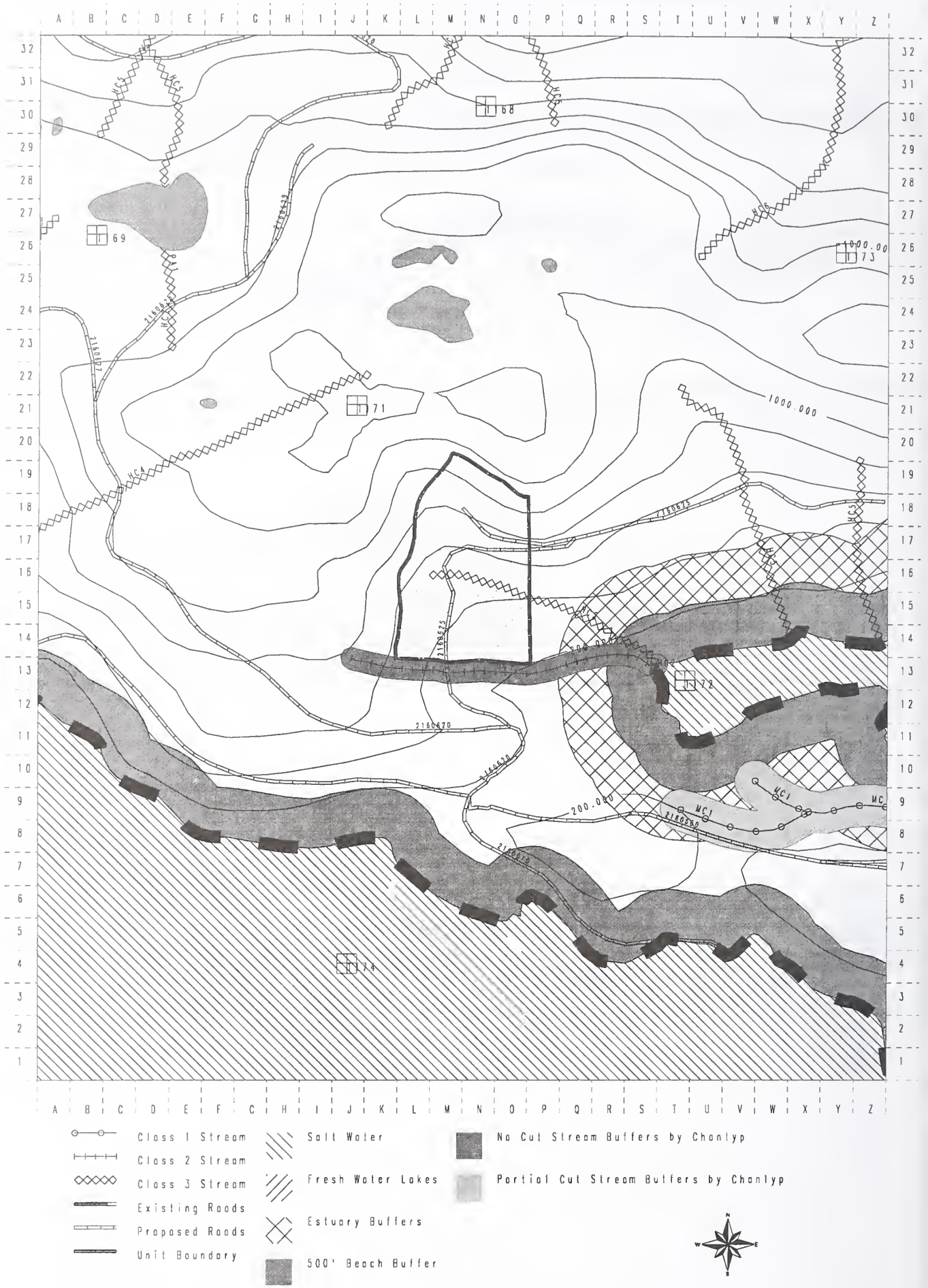
VCU-UNIT#: 681-347 ACRES: 53 VOL: 2014 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '91-390-140 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102- High windthrow risk, portion downhill yarded. Within designated old growth reserve. Retain stand structure for wildlife where feasible. Partial cut buffer. Productivity of site is high. Option to drop off top of unit for visual sensitivity. Unit design calls for clear-cut regeneration method. Verify roads and/or landing locations.
J. Oien 5/96	ROADS: Temporary road may need to be specified - needs soils input.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 2D (Traitors 35-60%), with 29EF (McGilvery 60-100%), 33D (StNicholas - McGilvery 35-60%). Probably need to shift unit and roads to S and SE to avoid very steep, McGilvery rock, and disturbances on N and W; includes slide on NE. Partial suspension believed small areas forested wetlands, McGilvery, MMI3 on slopes over 60% if unit shifted (BMPs 12.5, 13.9; TLMP 1991). Expect streams in unit needing protection (BMPs 12.6a, 13.16).
D.Kuntzsch, 7/96	FISHERIES: GIS identifies a class I blue/white TTRA stream as the southern boundary of the unit. As such, it requires a 100' minimum no-cut buffer. There are additional water quality streams (class III and IV) in the unit that will need protection and will need to be identified during layout (BMP 13.16).
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve and as a result was not surveyed by wildife in 1995 or 1996. If current policy changes and this unit is harvested, recommend partial harvest because this unit has been identified as an important wildlife travel corridor. This will help maintain forest structure and lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if unit is harvested, wildlife will need to survey the area prior to harvest. Maintain 1000 foot estuary buffer.
J. Short 5/96	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS: Retain at least (2) approximately 3 acre peninsulas extending from backline of unit.
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut if uphill yarding is the majority. Partial suspension required.

Chosino Study Area Interim Layout NOI Unit 681-347

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

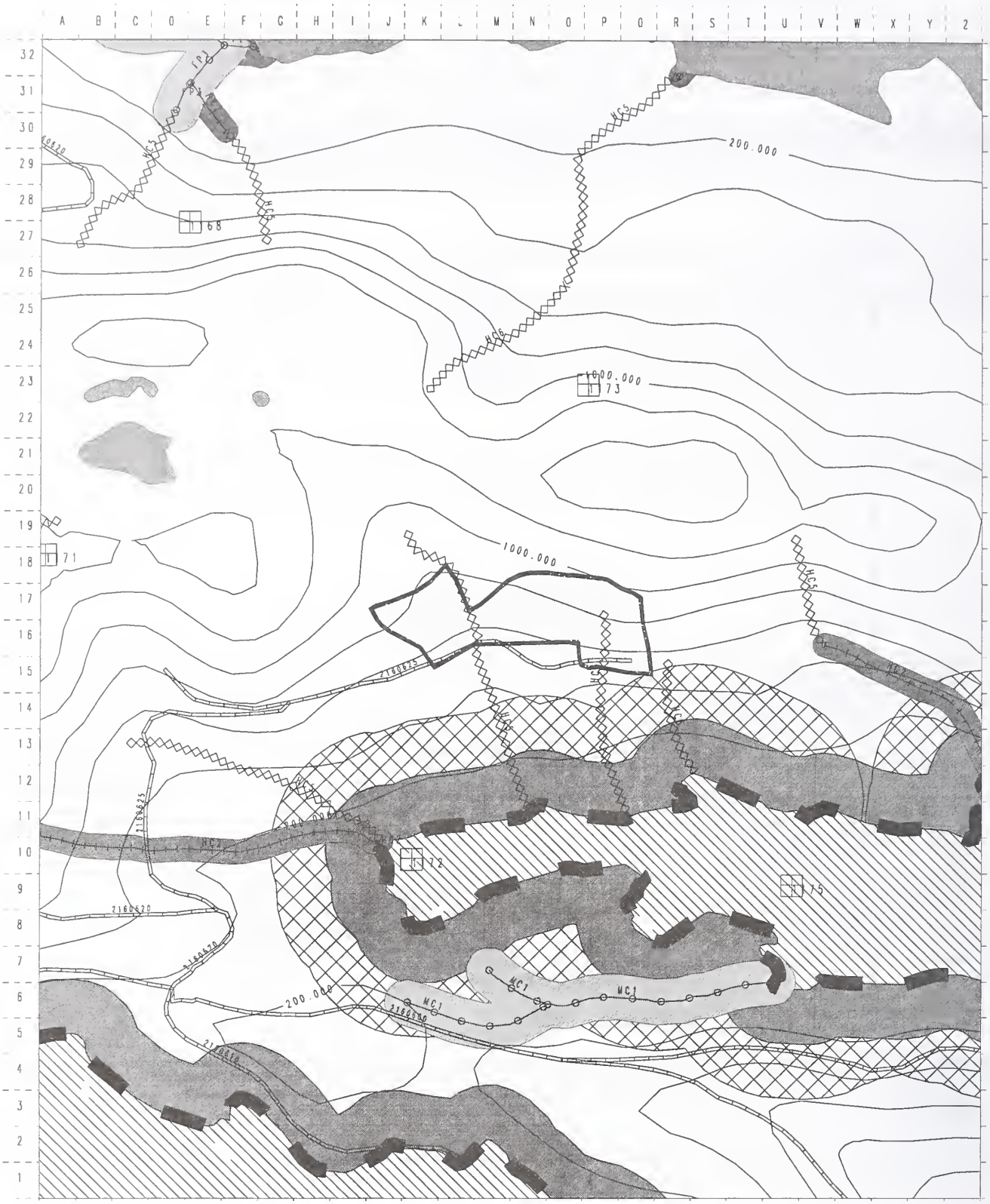
VCU-UNIT#: 681-352 ACRES: 34 VOL: 689 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '91-390-140 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: RS, SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-52, low windthrow risk, portion downhill yarded. Within designated old growth reserve. Productivity of site is moderate. Split-yarding required on stream. Dropped eastern setting due to visual. Option: helicopter yarding.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 442D (Ulloa - Sarkar 35-60%), with 442E (Ulloa - Sarkar 60-75%) and not mapped. Probable deletions and shift to make viable unit. Delete W end past stream for disturbed, slide, low volume. Delete about E half for disturbed, slides, steep, questionable volume, possibly rock, McGilvery and MMI4. This deletion greater than proposed for visuals. Remaining center of unit potential slight expansion uphill to N, but main expansion down hill to S. Partial suspension for moderate vulnerability karst, and possibly other concerns (BMP I3.9). Protection of streams needed, may include unit buffer on V-notch on W end of redesigned unit (BMPs 12.6a, I3.16).
D.Kuntzsch, 7/96	FISHERIES: GIS delineates three class III streams within this unit. The stream located in the west half of the unit may need a slope break buffer due to the size of the V-notch. Stream protection will need to be identified during layout (BMP 13.16).
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve and as a result was not surveyed by wildlife in 1995 or 1996. If current policy changes and this unit is harvested, wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if unit is harvested, wildlife will need to survey the area prior to harvest. Maintain 1000 foot estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut (use stream buffers). Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 681-352

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

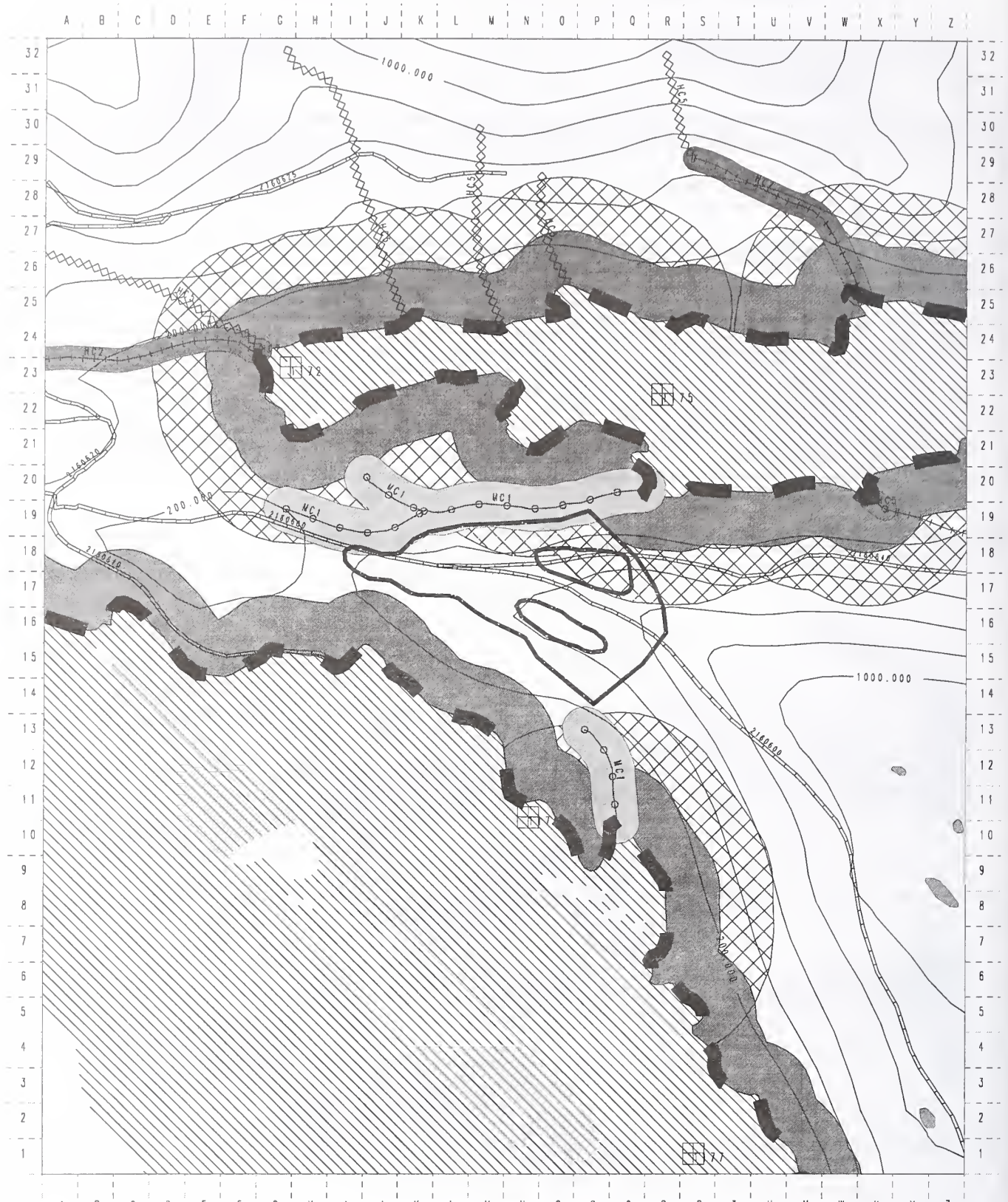
VCU-UNIT#: 681-361 ACRES: 51 VOL: 1515 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '91-390-140 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-36, high windthrow risk. Productivity of site is moderate. Within designated old growth reserve. Retain stand structure for wildlife where feasible. Partial cut buffer. Keep out of estuary buffer. Drop out steep / McGILVERY SOILS. Difficult terrain - potential blind leads in center of unit. Verify feasibility and modify may effect size of unit. Unit bdry as required. Profiles needed. Option: helicopter yarding.
J. Oien 5/96	ROADS: Evaluate for cable logging due to being roaded anyway.
R.Johnson, 10/10/95	SOILS/WATERSHED: W end and along top of ridge forested wetland primarily on wet McGilvery, with Kitkun. Slopes generally less than 70%, but steeper on numerous rock faces as proceed up ridge to top of unit. Slopes on N side range from 45 to 50% off top of ridge, 70-90% on the side plus predominance of rock faces and rock walls which steeper, to 60 to 65% on colluvial rock below rock faces and walls on bottom. Soils on N side predominantly wet McGilvery and Kitkun, with inclusions StNicholas and Petrel on flatter benches. Unit converted to helicopter logging. Still should delete unit because predominantly McGilvery, predominance rock faces and rock walls on side slopes, and predominance of lower volume wetland forests in unit (BMPs 12.5, 13.9; TLMP 1991). Better timber NE corner of unit on rock faces until bottom where on colluvial rock, but this may be in 500 foot beach buffer. Could be concern visuals with exposed rock following harvest. Monitor McGilvery if harvest (BMP 11.6). Streams in and adjacent to unit needing protection (BMPs 12.6a, 13.16). Unit card shows unit predominantly on ridge top and slopes to N, but ridge actually more to N than shown on card. Potential to move unit to S side of ridge, but expect conditions similar and not acceptable unit either. Potential concerns blasting and full bench flagged route 2160-630 road (BMPs 14.6, 14.7, 14.12). Defer harvest on Kitkun (1996).
D.Kuntzsch, 7/96	FISHERIES: GIS has a class 1 blue/white TTRA stream with a minimum 100' no-cut buffer as the north boundary of the unit. Water quality streams within and adjacent to the unit will need protection and will be identified during layout (BMP 13.16, 12.6a).
M.Dillman 7/96	WILDLIFE: The final definition of an estuary buffer may affect the acerage of this unit. If estuaries are determined to be where class 1 streams run into salt water, then the the northern 1/3 of this unit will be in an estuary buffer and will have to be dropped. This unit is within an old growth reserve and as a result was not surveyed by wildlife in 1995 or 1996. However, this unit has been identified as an important wildlife travel corridor. If current policy changes and this unit is harvested, partial harvest is recommended to maintain forest structure and lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested wildlife will need to survey the area prior to harvest.
T. Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut, use leave areas as retention. Should delete unit due to predominance of McGilvery soils.

Chasina Study Area Interim Layout NOI Unit 681-361

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

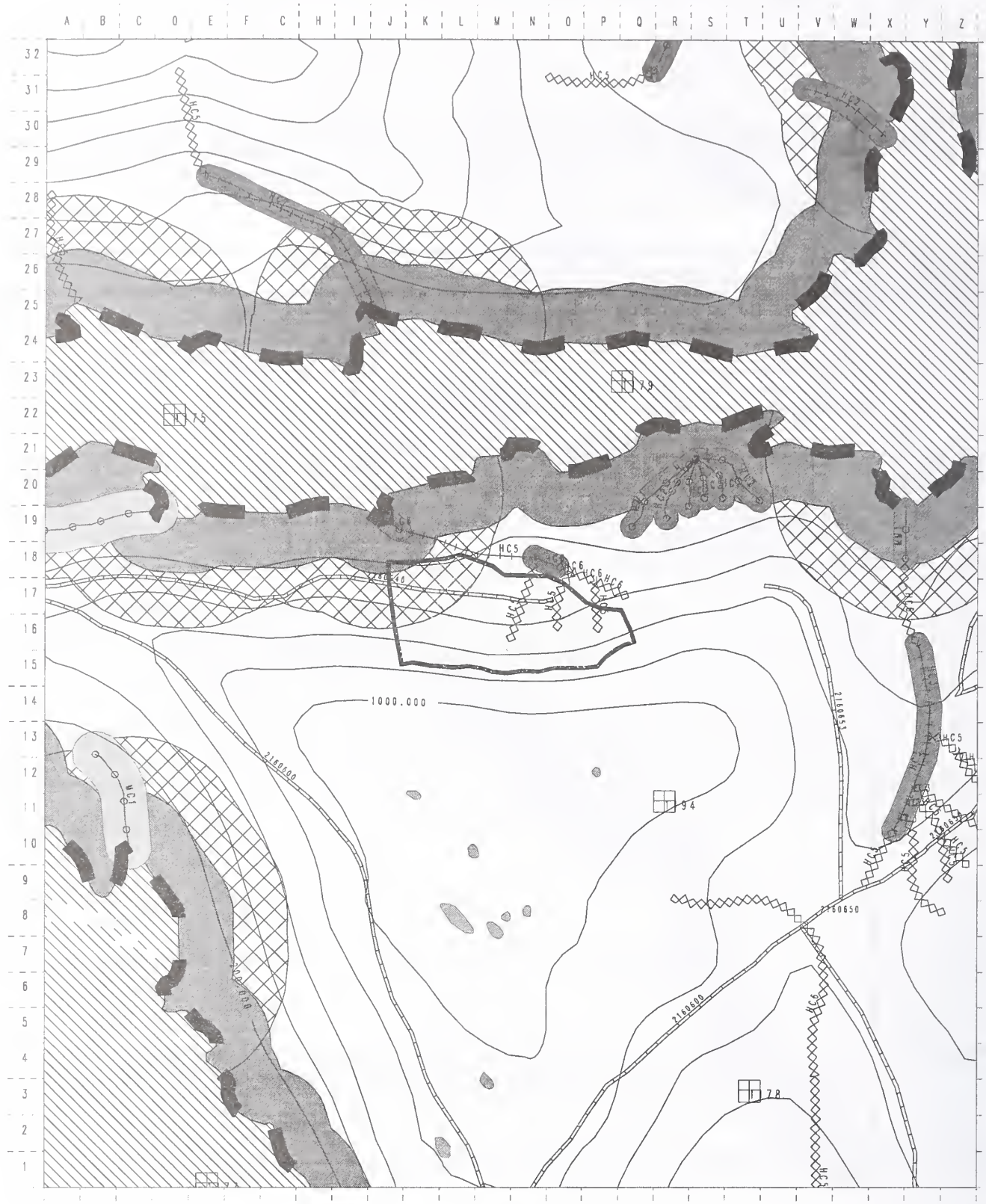
VCU-UNIT#: 681-363 ACRES: 41 VOL: 1558 MBF ALTERNATIVES: 3,6

PHOTO YR/#: '91-390-170 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-33, high windthrow risk, portion downhill yarded, high mistletoe present. Retain stand structure for wildlife where feasible. Productivity of site is high. Partial cut buffer. Uneconomic, low volume area east & west ends. Drop cliffs on top. Cliffs in center of unit may force 2/3 of unit into helicopter yarding. Maintain setting width between units. Option: helicopter. Not an estuary buffer.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 8/22/95 EIS R.Johnson	SOILS/WATERSHED: Soils McGilvery, St. Nicholas, Tolstoi, with Kitkun. Slopes 30-140%. Deleted above 800', very steep, cliffs, MMI 4, McGilvery (BMP 13.5, TLMP 1991). Remaining unit: A minimum of partial suspension in the areas that can be cable logged (BMP 13.9). Helicopter yarding of the upper reaches of the unit may be necessary due to the presence of small cliffs, steep slopes, and McGilvery. About 10 acres on slopes greater than 75%. Clear-cut should be excluded very steep, cliffs and McGilvery below 800 feet. Four streams for protection, see fisherics section of this card (BMP 13.16). Road feasible lower portion unit, but access only 200 to 400' corridor due to cliffs upslope and beach buffer down slope (BMP 14.2). Upper reaches largely inaccessible from proposed road. Proposed option to helicopter yard is desirable protect watershed resources (BMP 13.9).
J. Hannon, M. Becker, 6/28/95	FISHERIES: Stream 1 is a class II blue/ white that requires a 100' TTRA buffer of below the road crossing and a 25' buffer above the road crossing where stream becomes a class III orange/white (BMP 12.6). This road crossing will require fish passage and timing, unless it's located below 260' elevation (BMP 14.14). Stream 2 is a class III green/ white. Stream 3 is a class III green/ white. The class III orange/ white streams will require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16).
M.Dillman, J.Wrate 6/28/95	WILDLIFE: Deer and bear sign seen in unit. Unit occurs in an important wildlife travel corridor. Therefore, wildlife recommens partial harvest to maintain forest structure to lessen impact on wildlife migration and dispersal. Unit is within one-quarter mile of a bald eagle nest. Therefore road construction activity may be restricted in accordance with the Bald Eagle Protection Act and coordination with the U.S. Fish and Wildlife Service must be documented. Also the MOU between the U.S. Fish and Wildlife Service and the U.S. Forest Service concerning bald eagle nests must be followed. The unit is also being considered for helicopter harvest and the nest location may impact fly/drop zones. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density if unit is not partial cut. This unit was not surveyed in 1996. The unit is over the steepness criteria called for in the current goshawk protocols. The final definition of an estuary and the buffer requirements on them may affect the acreage of this unit. As it is currently mapped in GIS the northwest corner, about 1/5 of the unit is in an estuary buffer.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut, use estuary buffer as retention. Minimum partial suspension. Exclude very steep cliffs, McGilvery soils. Unit added to the preferred alternative due to proportionallity based on acres.

Chasina Study Area Interim Layout NOI Unit 681-363

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
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Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

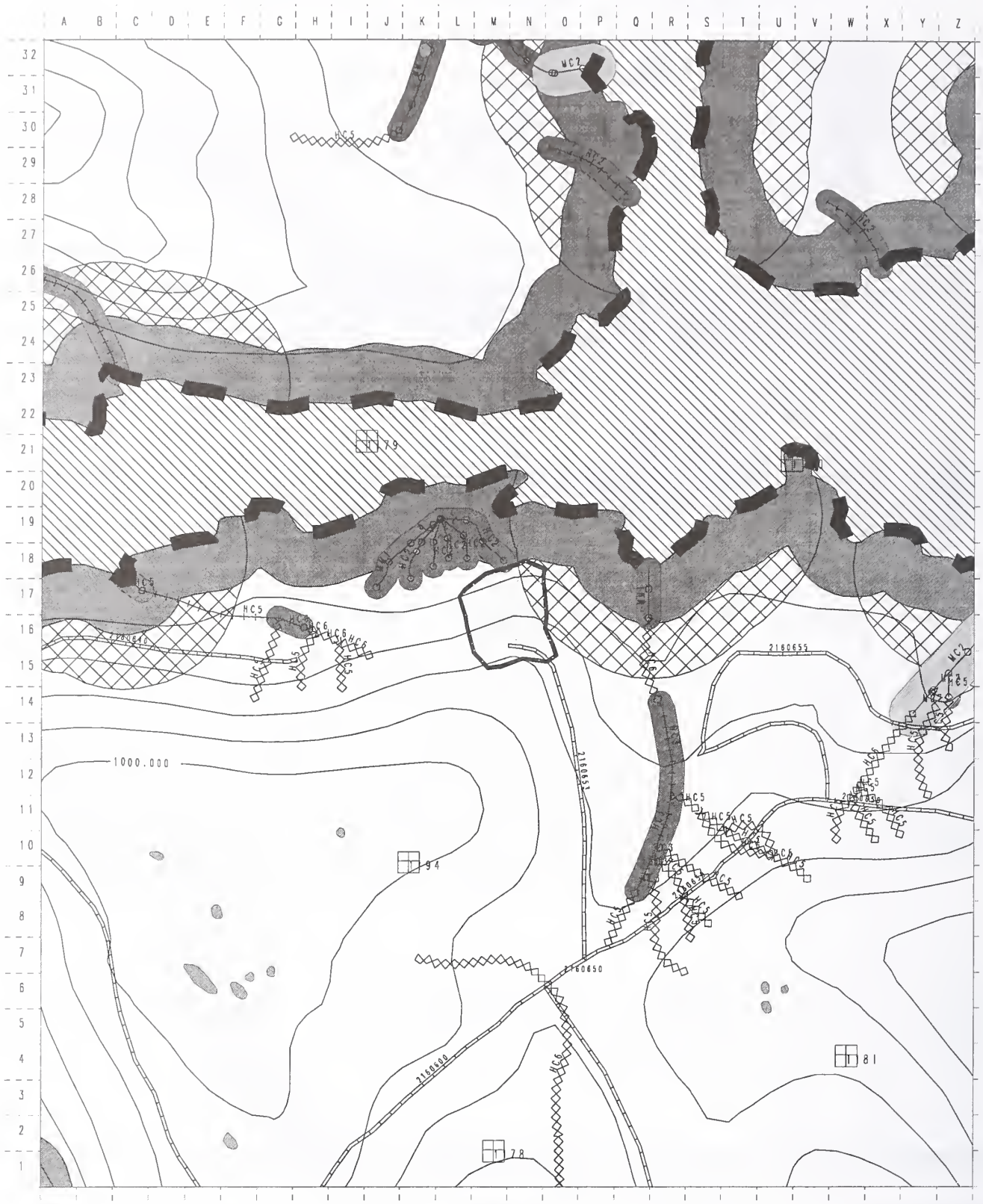
VCU-UNIT#: 681-365 ACRES: 14 VOL: 257 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-170 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-33, high windthrow risk. Maintain setting width between units. Stay out of estuary buffer. Partial cut buffer. Productivity of site is moderate. Portion of unit dropped due to lake. If road comes from the east from above, visually try to keep strip slightly NW. Option: helicopter yarding.
J. Oien 5/96	ROADS: Difficult roading - no concerns.
field D.J.Landwehr 8/25/95 EIS R.Johnson	SOILS/WATERSHED: Soils McGilvery with Kitkun, Kaikli, Tolstoi. Slopes 30-130%. Deleted low volume wetland SE corner (BMP 12.5), karst cliff NW corner, major cliff middle. Remaining unit: McGilvery-like soils in most of the unit. Three acres of slopes over 75%. Full suspension is required if harvested, but unit should be deleted because of very thin McGilvery (TLMP 1991). Monitor McGilvery if logged. Place west unit boundary on an O&W water quality stream. Leave a variable width buffer on the lake to incorporate fish habitat in small streams flowing into the lake (BMP 12.6a). See fisheries section. Road may be possible to access one of landings on ridge along E bounday (BMP 14.2). Prefer helicopter logging to salt water (BMP 13.9). Road planned from W does not appear feasible. Potential conversion to helicopter yarding recommended (BMP 13.9).
J. Hannon, M. Becker, 6/28/95	FISHERIES: Lake is a class I blue/ white adfluvial that requires a 200' TTRA buffer (BMP 12.6). Stream 1 is a class III orange/ white that requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). Recommend that the unit boundary be above the slope break of this stream. Stream 2 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 4 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 5 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 7 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Move unit boundary to exclude estuary buffer.
M.Dillman, J.Wrate, M. Pacheco 6/29/95 M.Dillman 7/96 T.Belfield, C.Tighe 7/27/96	WILDLIFE: Game trails/deer sign seen in unit. Lake found in unit. Karst in unit/cave located. Bald eagle nest found. Road construction activities may be restricted in accordance with the Bald Eagle Protection Act and all coordination with the U.S. Fish and Wildlife Service must be documented. The MOU between the U.S. Fish and Wildlife Service and the U.S. Forest Service concerning eagle nests must also be followed. If this unit is harvested by helicopter the eagle nest location may impact drop zones. The acreage may be affected depending on the final definition of an esuary buffer. As it is currently mapped in GIS the northeast corner of the unit would have to be dropped to meet the estuary buffer requirements. Sharp-shinned hawks were found in this unit. There were two birds seen, both young, and two birds heard. Sensitive plant surveys were conducted in this unit. Platanthera chorisia, the choris bog orchid, a species on the sensitive plant list, was found in the vicinity of this unit.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. A low elevation karst ridge runs along the north shore of the lake and into the northeast end of the unit. A small cave inside lake buffer. Outlet stream of lake flows into sinkhole and resurges a short distance later. Epikarst is well developed atop the ridge in the unit (Soils Report). Karst ridge should be excluded from the unit based on epikarst development as per the standards and guidelines outlined in the RSDEIS for the TLMP. LANDS: CULTURAL: Although scheduled for survey in 1996, field inspection indicated this unit was very unlikely to contain cultural resources. No survey was conducted. There are no concerns with this unit as planned. VISUALS:
T. Fifield 10/28/96	
G.Lawton 5/96	PRESCRIPTION: Full suspension required;recommend unit deletion due to presence of very thin McGilvery soils. Clearcut with reserves: retain 10-20% of cutting unit, where safe and feasible. Use type C clearcut.

Chosina Study Area Interim Layout NOI Unit 681-365

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Butters
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

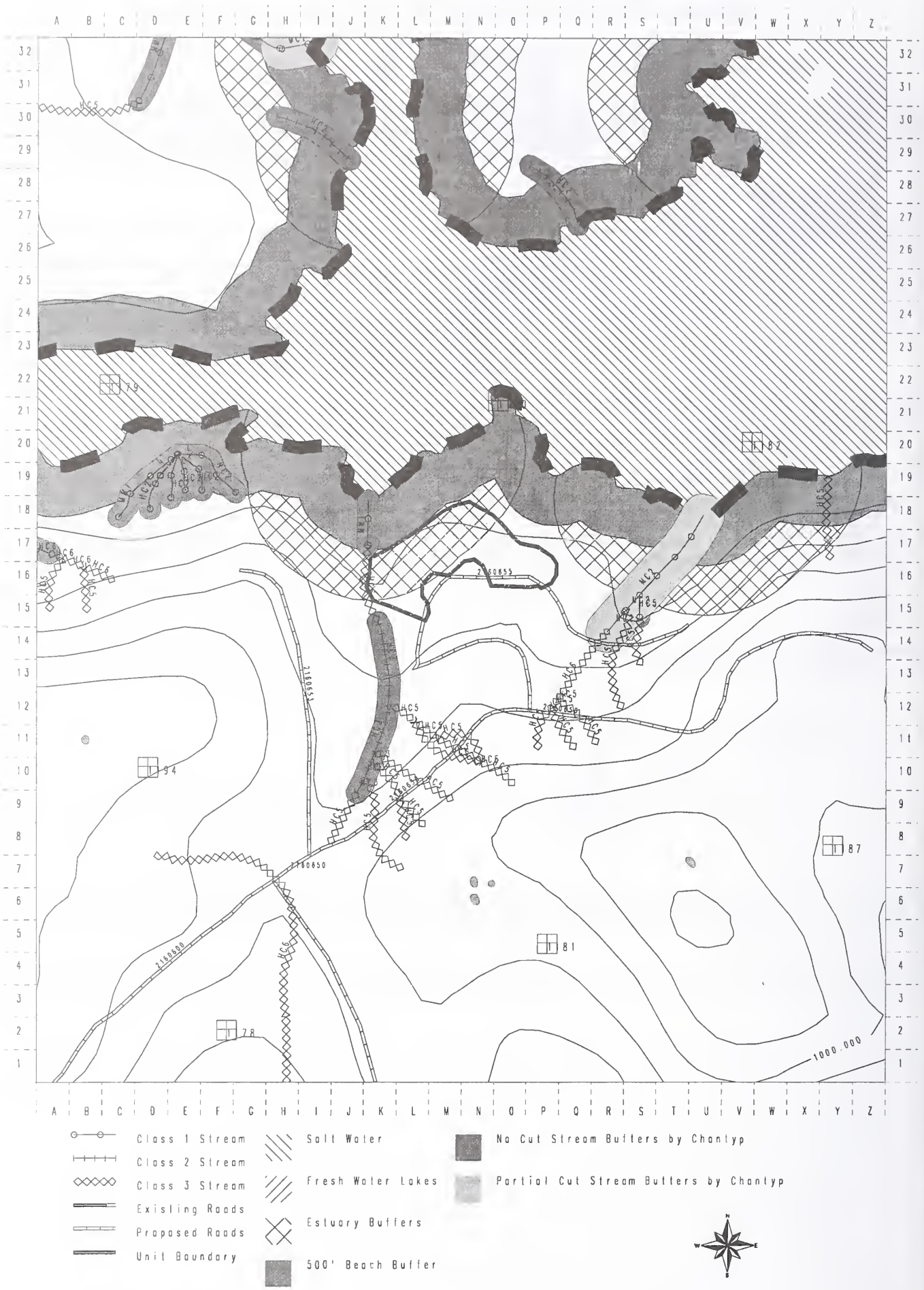
VCU-UNIT#: 681-367 ACRES: 25 VOL: 281 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-170 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-26, high windthrow risk. Productivity of site is low. 1/2 of unit is within estuary buffer. Partial cut buffer. Maintain setting width between units. If road comes from above, could use strip corridors. Uneconomic, low volume area surrounding. Option: helicopter.
J. Oien 5/96	ROADS: Difficult access - some concerns.
field D.J.L.andwehr 8/28/95 EIS R.Johnson	SOILS/WATERSHED: Soils StNicholas, with Tolstoi like, McGilvery, Kaikli. Slopes 30-90%. Deleted 6 acres low volume wetland center (BMP 12.5); stream buffer and MMI 4 below cliff and slope break W and SW (BMPs 12.6a, 13.5); and NE 1 A below cliff and 3 A wetland low volume and muskeg (BMP 12.5). Partial suspension required throughout the unit due to high MMI soils and thin soils (BMP 13.9). Establish a 100 to 150 foot wide buffer on the west boundary stream per the fisheries report (BMP 12.6a). Road access to top of unit appears feasible (BMP 14.2). Lower road may be required for slope breaks. Both roads may have slight adverse haul. Potential for conversion to helicopter yarding (BMP 13.9).
J. Hannon, M. Becker 6/24/95	FISHERIES: Stream 1 is a class II blue/white that requires a 100' TTRA buffer up to 80' of elevation, above this the stream is class III orange/ white that requires a 150' buffer (BMP 12.6). Lower road crossing will be difficult. Fish passage and timing will be required on both roads (BMP 14.14). Proposed road will be within 500' of beach fringe.
M.Dillman, J.Wrate, M. Pacheco 6/29/95 C.Tighe, B.Johnston 5/31/96	WILDLIFE: Game trails and bear sign in unit. Wolf scat seen in muskeg above unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. The acreage of this unit may be affected depending on the final definition of an estuary buffer. As the unit is currently mapped in GIS, and with the current estuary buffer definition, the western half of the unit needs to be dropped.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: Although scheduled for survey in 1996, field inspection indicated that this unit was unlikely to contain cultural resources (very steep). No survey was conducted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Uneven-aged Mgmt: for regeneration and structure retention. Strip corridors selection by cable yarding uphill. Overstory removal with 16" DBH limit. A lot of scrub (12 acres dropped). Partial suspension required throughout unit for soils protection.

Chasina Study Area Interim Layout NOI Unit 681-367

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 681-368 ACRES: 110 VOL: 2864 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-170 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-122, high windthrow risk. Productivity of site is moderate. Split-yarding required on stream. Partial cut buffer. Maintain setting width between units. Center portion dropped for stream braiding. Reach as high as possible upslope for downhill yarding. Lower may not be feasible with extensive road building. Option: helicopter yarding.
J. Oien 5/96	ROADS: minimal timber - Recommend helicopter logging for these units.
field D.J.Landwehr 8/24/95 EIS R.Johnson	SOILS/WATERSHED: Soils McGilvery, with Tolstoi, StNicholas, Kitkun, Kupreanof, Kaikli. Deleted 4A low volume wetland N center and center (BMP 12.5); 5A S of main creek very steep and slope into creek; 10A large cliff and very steep. Remaining unit: A minimum of partial suspension is required throughout the unit due to presence of high MMI soils, McGilvery soils and steep slopes (BMP 13.9). About 10 acres on slopes over 75%. Forested wetland N of main stream. A 150 foot wide buffer is prescribed for the west boundary creek (BMP 12.6a). Ten streams for protection in the unit (BMP 13.16). See fisheries section. Slope break buffers two main creeks above fish habitat, portions two tributaries, for MMI 4 (BMPs 12.6a, 13.5). Addition below large cliff NE needs full or good partial to mitigate landslides and protect soil productivity. McGilvery predominate upper portion unit. Should be deleted for compliance standards TLMP (1991). Monitor if log McGilvery. Road access appears feasible (BMP 14.2). Two or three roads may be needed for partial suspension (BMP 13.9). Access from SW could avoid extremely steep slopes, and road in beach buffer. Possible conversion to helicopter yarding desirable for protection of watershed resources (BMP 13.9).
J. Hannon, M. Becker, 6/29/95	FISHERIES: Stream 1 is a class II orange/ white that will require a 150' TTRA buffer (BMP 13.16). Stream 2 is a class III green/ white. Stream 3 is a class III orange/ white (mistakenly flagged green/ white). Stream 4 has two forks, the east fork is a class III green/ white, the west fork is a class III orange/ white. Stream 6 is a class I blue/ white that requires a 120' TTRA buffer (BMP 13.16). Above 180' of elevation stream 6 is a class III orange/ white that requires a 100' buffer (BMP 13.16). Above the road stream 6 is a class III green/ white. Stream 7 is a class III orange/ white. Stream 8 is a class III orange/ white. Stream 10 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Above 130' of elevation stream 10 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate, C.Crocker-Bedford, M.Pacheco 7/5/95 C.Tighe, A.Mueller 6/21/96	WILDLIFE: Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/21/96 Pygmy owl heard in unit at goshawk calling station #2. Good wildlife snags in southern part of unit. Deer sign, beds, pellets seen in unit. Game trails throughout unit. Rocky ridge on south side of unit. Wolf heard in area of muskeg to the south-west of the unit.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut, use buffers as retention. Soils to look at. Minimum of partial suspention. Full suspention addition below cliff northeast. Should delete upper portion of unit due to McGilvery soils (compliance with TLMP 1991).

Chasina Study Area Interim Layout NOI Unit 681-368

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

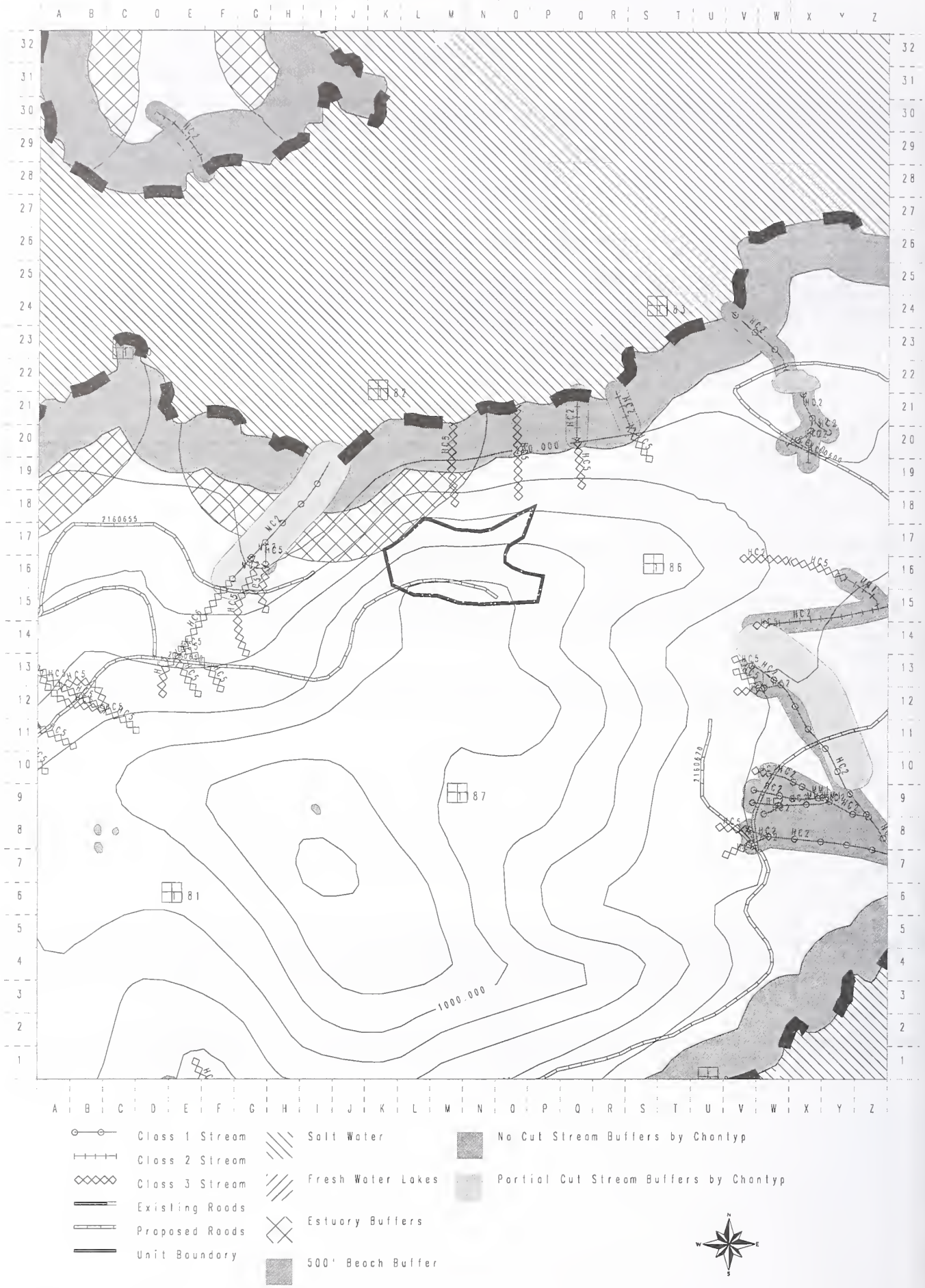
VCU-UNIT#: 681-372 ACRES: 23 VOL: 732 MBF ALTERNATIVES: 3,6

PHOTO YR #: '91-390-213 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: HE, SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68101-12, high windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is moderate. Stay out of estuary buffer. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to helicopter at lower end below cliffs (681-383). Keep off of cliffs. Uneconomic, low volume area east tip. Suspension requirements (see soils or fish). Visual concerns could be lowered by retaining trees in area above cliffs. Spruce promoted by exposed soils. Option: helicopter, strip corridors. Several acres dropped due to estuary buffer.
J. Oien 5/96	ROADS: No concerns - road costs high for last 1/2 mile of road access.
field D.J.Landwehr 9/15/95 EIS R.Johnson	SOILS/WATERSHED: Soils McGilvery, Tolstoi, with StNicholas, Kitkun. Slopes 65 to 120%. Deleted middle of unit very steep, large cliffs, MMI 4 soils (BMP 13.5). Remaining unit: NE corner now 681-383 for helicopter logging. About 25 acres on slopes over 75%. McGilvery soils are common in the upper section of the unit and above the cliff. A minimum of partial suspension is required throughout the unit including forested wetlands on a small bench near top of unit where slopes are less than 30% (BMPs 12.5, 13.9). Depending on final road location a 10 acre area above the cliff may require helicopter yarding. Keep slash out of dry V-notch W boundary (BMP 13.16). Should delete almost all unit above cliff for compliance with protection McGilvery in TLMP (1991). Monitor McGilvery if not deleted. Road top of unit feasible (BMP 14.2). Lower road not appear feasible due beach buffer and steep slopes. Possible conversion to helicopter unit desirable for protection watershed resources.
J. Hannon, J. Wrate, 6/30/95	FISHERIES: Stream 1 is a class III orange/ white that requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). Stream 2 is a class III green/ white that requires directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16). There is a 500' beach buffer adjacent to this unit.
J.Wrate, J.Hannon 6/30/95 C.Tighe, A.Mueller, B.Johnston 7/25/96	WILDLIFE: Game trails, deer sign, and bear sign seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. The acreage of this unit may be slightly effected depending on the final definition of an estuary and its buffer requirements. As this unit is maped in GIS and using the current estuary buffer definition the unit will lose the northwestern tip.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Soils to look at. Minimum partial suspension. Helicopter yard 10 acres above cliff. Keep slash out of dry V-notch W boundary. Should delete almost all of the unit above the cliff for compliance with McGilvery soils protection (TLMP 1991).

Chasina Study Area Interim Layout NOI Unit 681-372

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portial Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

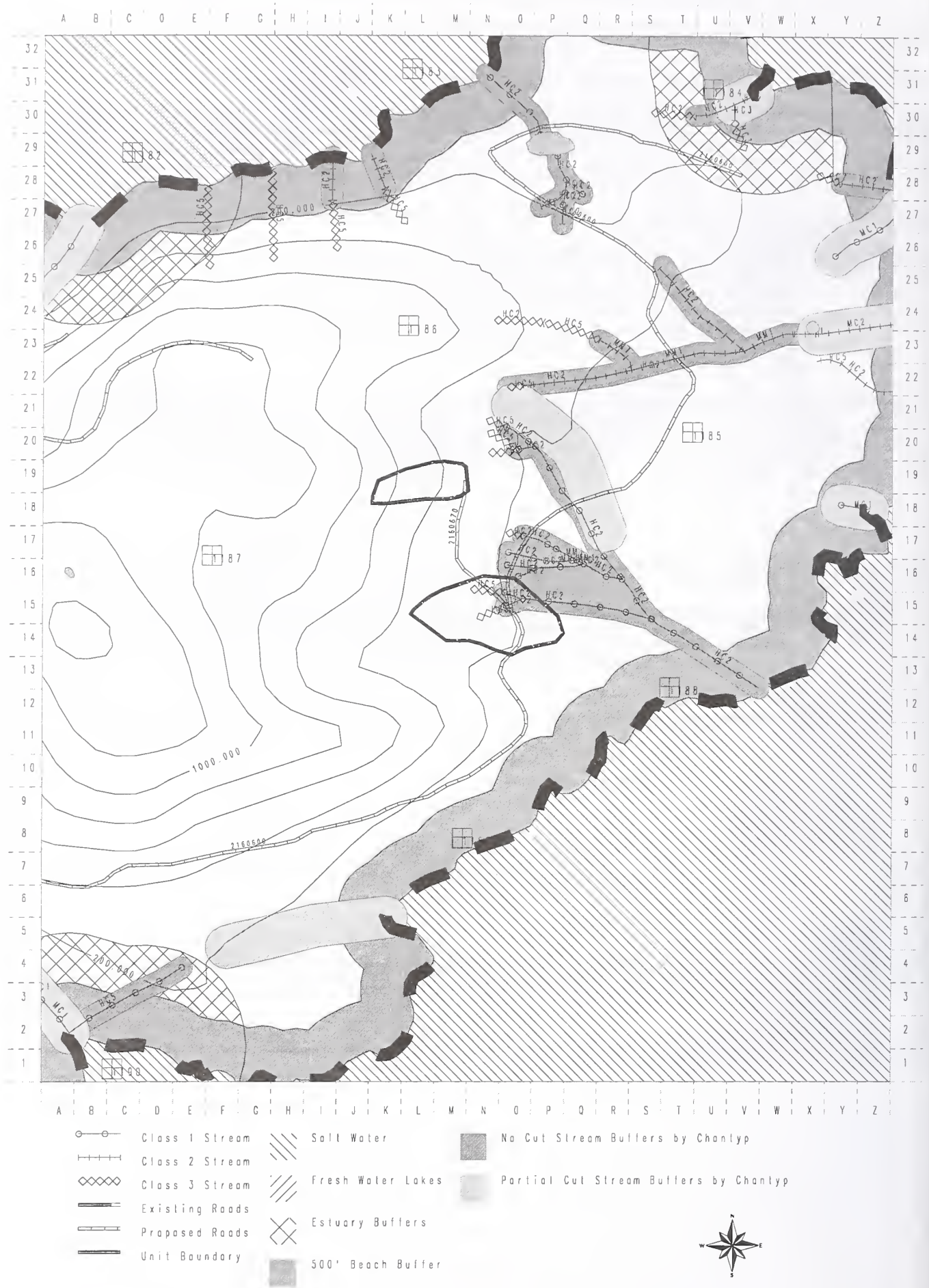
VCU-UNIT#: 681-373 (Actually 682-373) ACRES: 25 VOL: 750 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-212 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68101-6, high windthrow risk, portion downhill yarded. Productivity of site is moderate. Road should be adjusted to come into northern section. Uneconomic, low volume area central portion of unit. Partial cut buffer. Anticipate planting 20 acres of Alaska yellow cedar to maintain composition. Option: helicopter yarding.
J. Oien 5/96	ROADS: No concerns.
R.Johnson, 6/96	SOILS/WATERSHED: Soils mapped 33E (StNicholas - McGilvery 60-75%), with 33F (StNicholas - McGilvery 75-100%), not mapped, 75D (Kupreanof - McGilvery 35-60%), 48C (Helm - Kitkun 5-35%). Partial suspension for MMI3, forested wetland, and McGilvery (BMPs 12.5, 13.9; TLMP 1991). Probable deletion for MMI4 N end, included in deletion by silviculture (BMP 13.5). Silviculture deleted low volume wetlands in all but area SE corner and W center (BMP 12.5). Partial suspension for reasons above. Protection of streams per fisheries (BMPs 12.6a, 13.16). Possible stream(s) bordering W center piece require protection also (BMP 13.16). Possible option to convert to helicopter yarding (BMP 13.9).
M.Becker, J.Hannon, 7/6/95 D.Kuntzsch, 7/96	FISHERIES: New unit boundaries should exclude most fisheries concerns. Stream 7 branches just within the east boundary of the south unit section. From the east unit boundary to approximately the road line, stream 7 is a class II blue/white TTRA stream; this reach requires 120' no-cut buffer. Above the proposed road line both branches of stream 7 become class III orange/white. The two branches require directional falling, split yarding or full suspension over, and immediate removal of logging debris (BMP 12.6a, 13.16).
D.Parker, C.Crocker-Bedford, N.Matson, E.Campbell 7/6/95 M.Dillman B.Johnston 6/20/96	WILDLIFE: Marbled murrelet eggshell fragments found in southwest corner of unit (goshawk calling station 8). Deer sign seen throughout the unit. Several patches of grass in unit. Snag patches in unit also. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/20/96 Found both red and Sitka alder in area as well as Pacific yew trees. Spent some time looking for more marbled murrelet eggshells. Strange gray bedrock in streams.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspention required.

Chasina Study Area Interim Layout NOI Unit 681-373

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

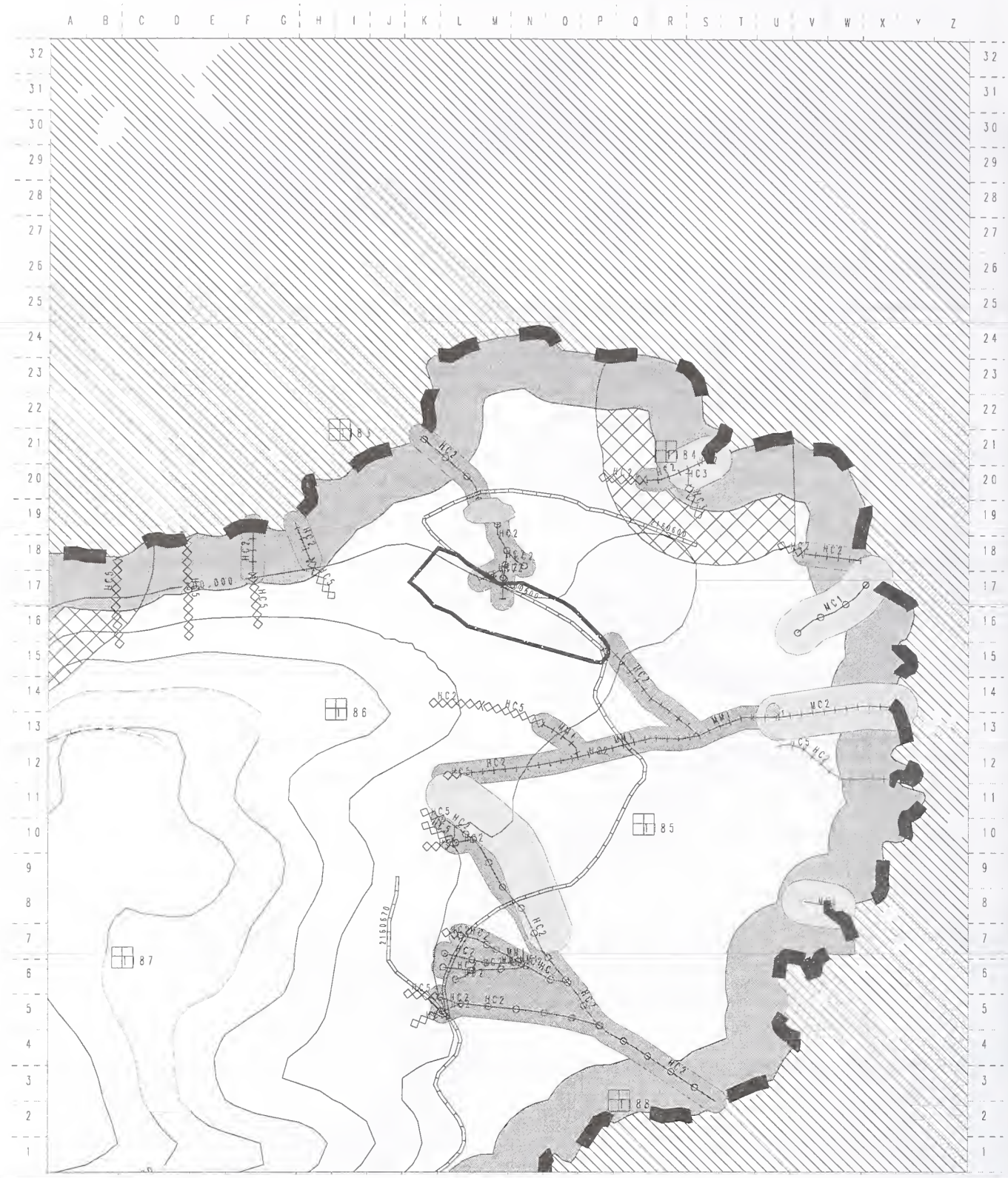
VCU-UNIT#: 681-376 ACRES: 19 VOL: 380 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-213 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68101-7, low windthrow risk, portion downhill yarded, high mistletoe present. Unit changed to provide proportionality of volume classes. Productivity of site is low. Maintain setting width between units. Drop NW corner - low volume. Keep road out from toe slope for deflection. Narrow unit to mitigate visual concerns and YC seed dispersal. Lake buffer. Anticipate planting 10 acres of Alaska yellow cedar to maintain composition. Road may be realigned. Option: helicopter but low volume.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 9/15/95 EIS R.Johnson	SOILS/WATERSHED: Soils McGilvery and Tolstoi. Slopes 40-90%. Deleted NW third due to: slopes, cliffs, and low volume. Remaining unit: Full suspension is required in the middle of the unit due to presence of shallow McGilvery soils on convex slopes and rock outcrops. Partial suspension is required in the remainder of the unit (BMP 13.9). Compliance with McGilvery requirements in TLMP (1991) requires deleting middle third of unit. Monitor if not deleted. Road location base of slope appears feasible (BMP 14.2). NW third of unit not feasible from lower road. Conversion to helicopter yarding desirable for protection of watershed resources (BMP 13.9).
J. Hannon, M. Becker, N. Matson, 7/5/95	FISHERIES: The Class I adfluvial lake on the northeast boundary requires a 100' no cut/ 400' partial cut buffer (BMP 12.6). Stream 2 is a Class I blue/ white that requires a 120' TTRA buffer (BMP 12.6) Stream 3 is a class I blue/ white stream that requires a 100' TTRA buffer (BMP 12.6). This stream becomes Class III green/ white part way into the unit. Class III green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
M.Dillman, M.Pacheco 6/30/95 M.Dillman, B.Johnston 6/20/96	WILDLIFE: Moss/hemlock understory. Karst and blowdown in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Full suspension middle of unit; this section should be deleted from the unit based on percent of McGilvery present (TLMP 1991). Partial suspension remainder. "Unit added from the preferred alternative due to proportionality based on acres."

Chasina Study Area Interim Layout NOI Unit 681-376

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Soil Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Portion Cut Stream Buffers by Chantyp

N
W E
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Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 681-377 ACRES: 7 VOL: Unit deleted ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-213 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68102-1, low windthrow risk, high mistletoe present. Unit changed to provide proportionality of volume classes. Productivity of site is low. Unit is 90% in estuary buffer. Only center portion is merchantable. Narrow to mitigate visual concerns and seed dispersal. Anticipate planting 3 acres of Alaska yellow cedar to maintain composition. Option: helicopter yarding.
J. Oien 5/96	ROADS: Delete - Unit is in estuary buffer.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 75D (Kupreanof - McGilvery 35-60%), with 48C (Helm - Kitkun 5-35%), 51C (Kitkun 0-40%), 90D (Grindall - Kitkun 35-60%). Silviculture deleted low volume wetlands (BMP 12.5). Partial suspension remaining for forested wetlands and McGilvery (BMPs 12.5, 13.9; TLMP 1991). Streams designated for protection by fisheries (BMPs 12.6a, 13.16), now out of unit. Potential still stream(s) in unit needing protection (BMP 13.16).
J. Hannon, M. Becker, N. Matson, 7/5/95	FISHERIES: Need a 500' beach buffer. Streams identified are outside of unit boundary. 1000' estuary buffer would delete entire unit, and proposed road would be within estuary buffer.
M.Dillman, P.Pacheco 6/30/95 M.Dillman 7/96	WILDLIFE: Moss/hemlock understory. Blowdown in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit was dropped due to estuary buffer so was not surveyed in 1996.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Unit dropped due to estuary buffer. "Unit added from the preferred alternative due to proportionality based on acres."


Crasino Study Area Interim Layout NOI Unit 681-377
Mapscale 1:15840 (4 inch to Mile)
Created 5-95, /u07/projects/crasino/amls/riguc2
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
HC1
HC2
HC3
Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary
Salt Water
500' Beach Buffer
Esturary Buffers
No Cut Stream Buffers by Chantyp
Partia Cut Stream Buffers by Chantyp
Fresh Water Lakes
N
W
E
S
0
.25
0.5 Miles
Mapscale 1:15840

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

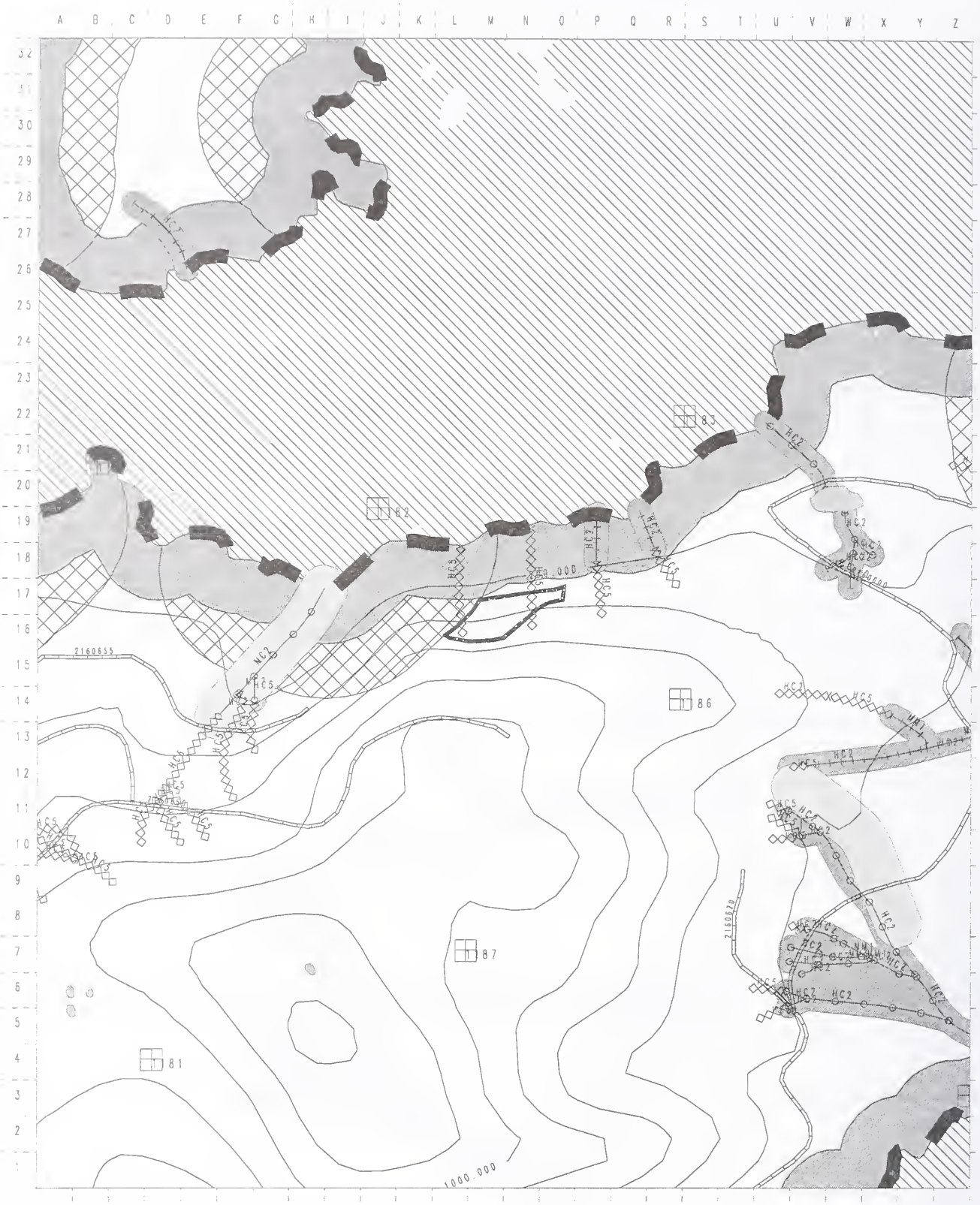
VCU-UNIT#: 681-383 ACRES: 6 VOL: 165 MBF ALTERNATIVES: 3,6

PHOTO YR/#: 91-390-213 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is high. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection (681-372). Stay out of estuary buffer.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 9/15/95 EIS R.Johnson	SOILS/WATERSHED: Portion of 681-372 isolated because lower road not feasible. Soils McGilvery and Tolstoi. Slopes 65 to 85%. Partial suspension recommended. Helicopter prescribed, should result full suspension (BMP 13.9).
J. Hannon, J. Wrate, 6/30/95	FISHERIES: Stream 1 is a class III orange/ white. Stream 2 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16).
J.Wrate, J.Hannon 6/30/95 C.Tighe, A.Mueller. B.Johnston 7/25/96	WILDLIFE: Game trails; deer sign and bear sign seen in unit. 7/25/96 The acreage of this unit could change depending on the final definition of an estuary and its required buffer. Currently the way the unit is mapped in GIS, its western half is within an estuary buffer and would need to be dropped. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. 2 acres will be dropped due to estuary buffer.

Chassahowitzka Study Area Interim Layout NOI Unit 681-383

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

N
W E
S

Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 682-301 ACRES: 57 VOL: 1827 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-171 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windthrow risk. Productivity of site is high. Visually sensitive. Uneconomic, low volume area east and south. Adjacent to old growth reserve. Estuary buffer at bottom probably coincides with steep drop-off blind-lead area which parallels shoreline at about 55'. Option: helicopter yarding / strip corridors.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 9/12/95 EIS R.Johnson.	SOILS/WATERSHED: Soils Tolstoi, StNicholas, McGilvery, with Kaikli. Slopes 40-110%; 20A greater than 75%. Deleted 5A NW MMI4; W side below cliff due to yarding limitations (BMPs 13.9, 13.5). Remaining unit: A minimum of partial suspension is required throughout the unit due to high MMI soils (BMP 13.9). Locate the west unit boundary on top of the nearly continuous 40 foot cliff. Delete 5 acres of low volume timber along the northeast side of the unit. O&W protection (DF, SY and clean of introduced debris) on the south boundary stream and "middle" stream (BMP 13.16). One stream on each side of the middle stream need G&W protection (DF, SY or partial over , and clean of introduced debris before the end of the operating season). Approximately 2 to 3 A above cliff/slope break and adjacent these three streams may be unsuitable for harvest. May need to helicopter because of concerns roads. Road NW portion unit crosses MMI4 soils at heads incipient drainages on 70% slopes, is not suitable location (BMPs 13.5, 14.2, 14.3, 14.5, 14.6, 14.7, 14.8, 14.9, 14.12, 14.14, 14.17). Cliffs and convex slopes limit cable yarding to 400 to 600' corridor along road. Remainder unit requires additional roading or helicopter yarding. New location for road needs review (BMP 14.2). Proposed conversion to helicopter yarding desirable for protection of watershed resources (BMP 13.9).
K. McCartney, K.Buckley, 5/28/96	FISHERIES: Stream 4 is a class IV green/ white. Stream 5 is a class IV green/ white. Stream 6 is a class IV green/ white. The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate, M.Pacheco 7/18/95 C.Tighe, B.Johnston 5/28/96	WILDLIFE: Wolves heard howling and snarling from goshawk calling station 6 (middle of the unit). Deer browse, pellets, and game trails seen throughout unit. No bear sign seen. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/28/96 Unit has snags throughout area. Sapsucker holes in trees and snags. Survey was not actually in the unit but just below it. Unit exceeds the steepness criteria in the current goshawk protocol. Maintain 1000 foot estuary.
J. Short 5/96	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS: Retain about 3 acres in each of the upper corners of this unit - in effect angling the boundaries at these corners. About 1/3 the distance from the north corner (where the backline makes a pronounced jog) retain a 5-10 acre peninsula extending from the backline.
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. O&W protection, DF, SY or full over, and clean of introduced debris immediately. G&W protection, DF, and SY (where possible), or partial over, and clean of introduced debris before the end of the operating season. Minimum partial suspension. West boundary top of cliff. Delete 5 acres low volume northeast.

Chasina Study Area Interim Layout NO1 Unit 682-301

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

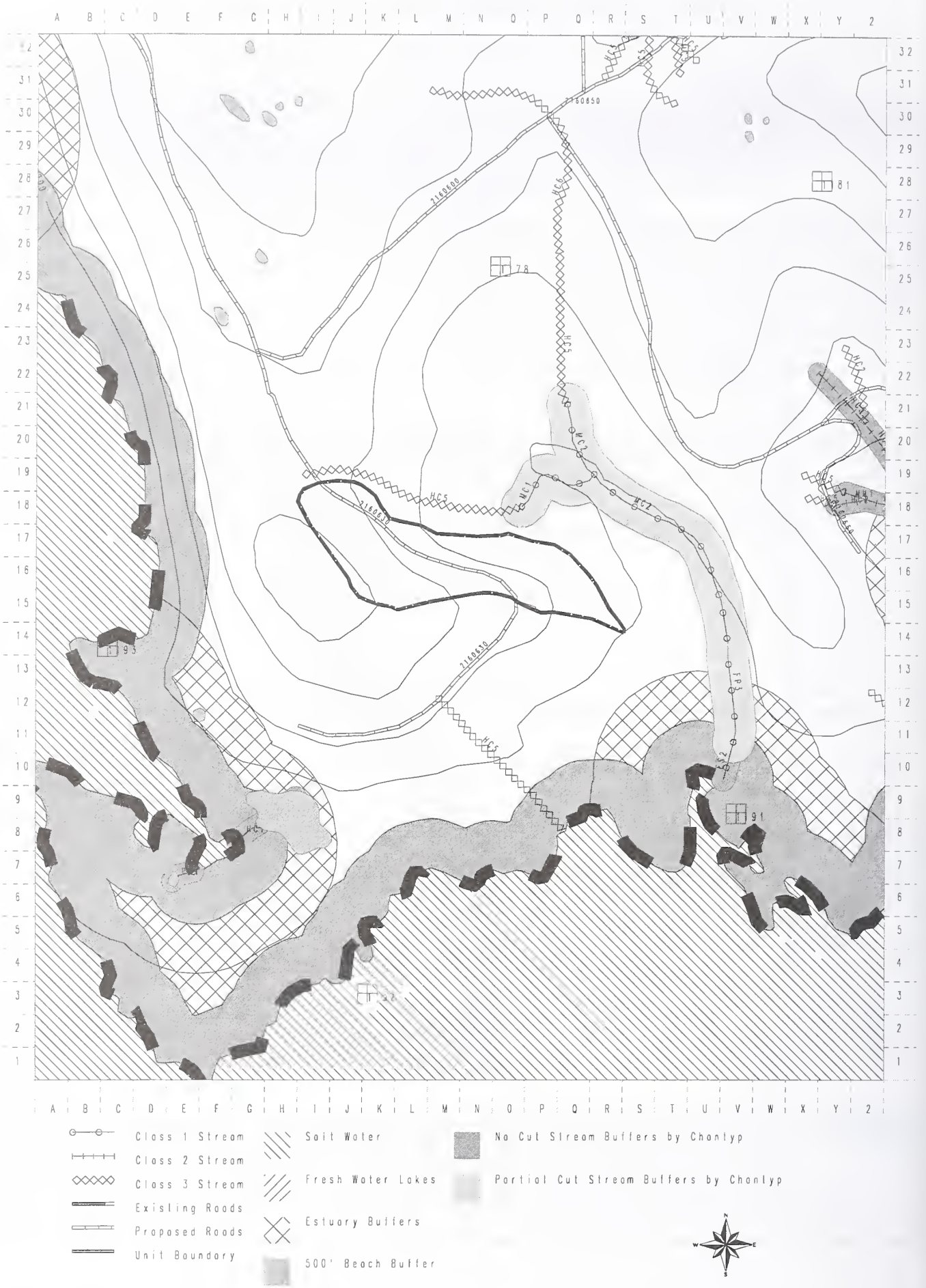
VCU-UNIT#: 682-302 ACRES: 50 VOL: 1375 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '91-390-172 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: RS /HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: high windthrow risk, portion downhill yarded, high mistletoe present. Productivity of site is high / moderate. Uneconomic, low volume area surrounding. Maintain setting width between units. Steep slopes may limit yarding. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection (682-307). Option: running skyline.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr. 9/13/95 EIS R.Johnson.	SOILS/WATERSHED: Soils Tolstoi, Traitors, McGilvery, with StNicholas. Slopes 40-90%; about 6A greater than 75%. A minimum of partial suspension required over most of unit due to high MMI soils (BMP 13.9). Full suspension should be achieved on slopes over 75% (about 2 acres) below cliff middle of unit. Delete 3 acres of low volume timber west of the G&W stream in the west end of the unit. O&W protection is needed on the north boundary stream and a short reach of a tributary to that stream within the unit (BMP 13.16). G&W protection on a short reach within unit. A spur road may be needed to access timber between the two O&W streams. Very high blowdown potential top of ridge. Proposed road not appear feasible due sustained steep slopes and cliffs (BMP 14.2). Access from E may be feasible. Proposal to convert to helicopter yarding desirable for protection of watershed resources (BMP 13.9).
K. McCartney, K. Buckley, C. Tighe, B. Johnston, 5/30/96	FISHERIES: Stream 1 is a class I blue/ white TTRA; this stream is outside the unit. Stream 2 is a class I blue/ white that requires a 200' TTRA buffer (BMP 12.6). Above the confluence with stream 5, stream 2 becomes a class III orange/ white. Stream 3 is a class III orange/ white. Stream 5 is a class III orange/ white. Above 380' of elevation stream 5 becomes a class IV green/ white. Stream 6 is a class IV green/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate 7/19/95 C.Tighe, B.Johnston K.Buckley , K.McCartney 5/30/96	WILDLIFE: Deer sign throughout unit. No understory vegetation. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Good wildlife snags in unit.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. O&W streams require DF, full over or SY, and cleaning of introduced debris immediately. G&W streams requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Minimum of partial suspension. Full suspension required for slopes over 75% below cliff middle of unit. Delete 3 acres low volume west of G & W stream west end of unit.

Chastina Study Area Interim Layout NOI Unit 682-302

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sally Warfield on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 682-303 ACRES: 48 VOL: 743 MBF ALTERNATIVES: 4,6

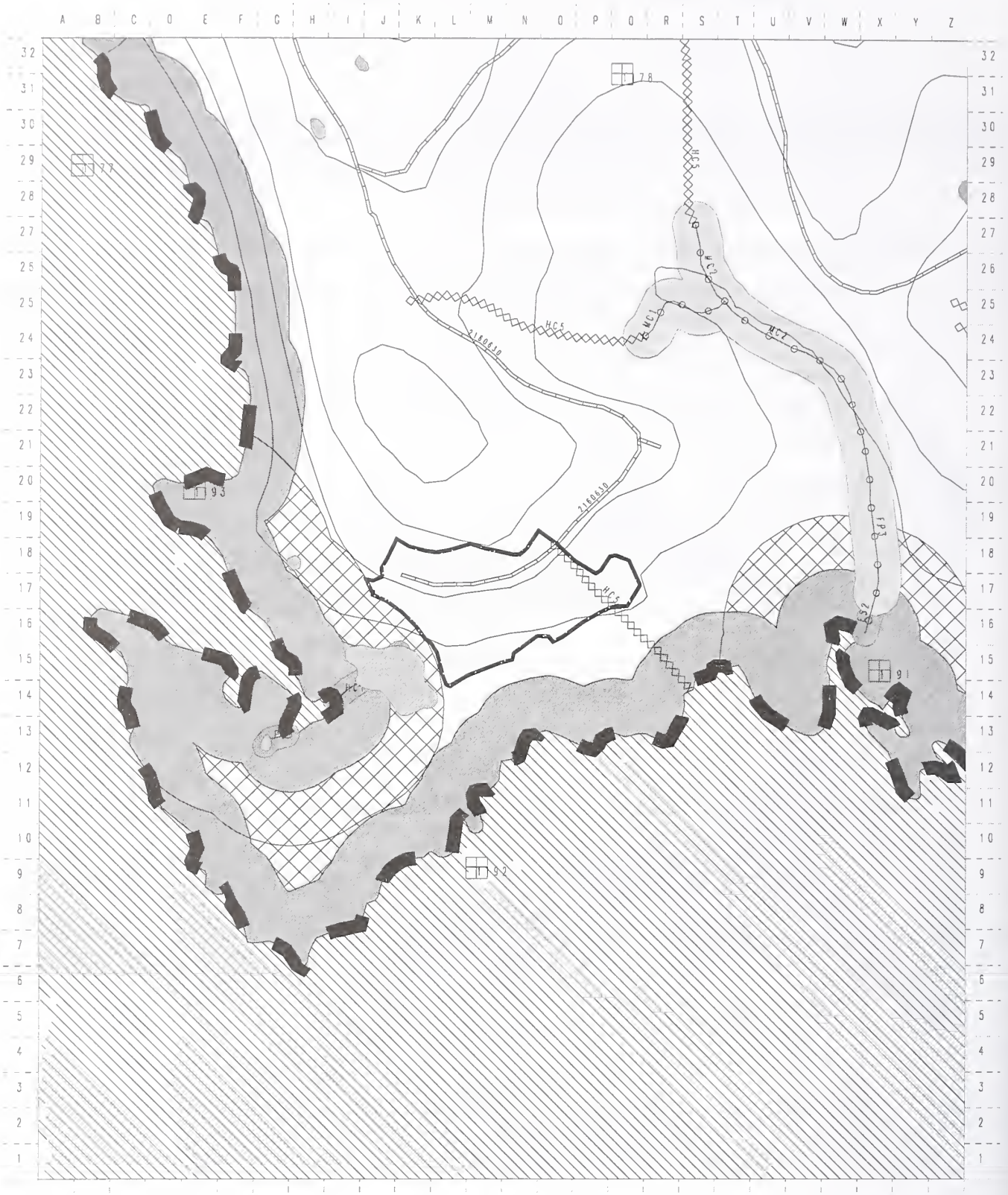
PHOTO YR/#: '91-390-172 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: RS

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REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk, portion downhill yarded. Productivity of site is moderate. Unit design calls for even-aged (clear-cut) regeneration method. Verify roads and/or landing locations. Difficult layout. Uneconomic, low volume area south & north. Avoid estuary buffer. Avoid extremely steep areas. Suspension requirements (see soils or fish). Get road as high as possible. Several acres dropped for estuary buffer.
J. Oien 5/96	ROADS: No concerns - L.S. needed for final location.
field D.J.Landwehr. 9/14/95 EIS R.Johnson	SOILS/WATERSHED: Soils McGilvery, Tolstoi, StNicholas. Slopes 30-90%. A minimum of partial suspension required over the entire unit due to the presence of very thin McGilvery soils. Full suspension is required on about 4 acres of slopes greater than 75% (BMP 13.9). Profiles needed verify suspension. A minimum of a 100 foot buffer on the lake (BMPs 12.6, 12.6a). Portions of three streams for O&W protection (BMP 13.16). Four streams for G&W protection. Stocking after harvest is questionable due to thin, dry McGilvery soils on a south aspect. The harvest unit has greater than 41% McGilvery soils. Silviculturist should monitor stocking in this unit if harvested, and watershed monitor disturbance. Unit should be deleted for compliance with TLMP (1991) standards for McGilvery. Road bottom unit appears feasible, but topography makes locating landings difficult (BMP 14.2). May need road on top of slope due convex slopes and limitations for landings on the lower road. Proposal to convert to helicopter yarding desirable for protection of watershed resources (BMP 13.9).
K. McCartney, K. Buckley, 5/29/96	FISHERIES: Stream 1 is a class III orange/ white. Stream 2 is a class III orange/ white. Stream 3 is a class III orange/ white. Stream 4 is a class III orange/ white; outside of unit stream 4 is a class II orange/ white (AHMU). Stream 5 is a class II orange/ white outside the unit, but within the unit it is a class IV green/ white. Stream 6 is a class IV green/ white. The lake requires a 100' no cut buffer (BMP 13.16). Estuary requires a 1000' estuary buffer; this will cut out the south west corner of unit. The class III orange/ white streams require directional falling, and split yarding, or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The class IV green/ white streams require directional falling, and split yarding(where practical), or partial suspension. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate 7/7/95 C.Tighe, B.Johnston 5/29/96	WILDLIFE: Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/29/96 Loon heard on lake. Wolf tracks seen along west end of lake. This unit may lose the western corner depending on the final definition of an estuary and its required buffer. As the unit is mapped in GIS, and following the current definition of an estuary, this corner will have to be dropped.
J. Short 5/96	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: Although scheduled for survey in 1996, field inspection indicated the unit was unlikely to contain cultural resources. No survey was conducted. There are no concerns with this unit as planned. VISUALS: Retain about a 10 acre peninsula extending down from the middle of the backline - in effect almost breaking the unit visually into two sections.
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut, stream buffers for retention. O&W streams require DF, full over or SY and cleaning of introduced debris immediately. G&W streams requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Minimum partial suspension. Full suspension required on slopes over 75% (about 4 acres). Unit should be deleted for compliance with TLMP (1991) standards for McGilvery soil type.

Chasina Study Area Interim Layout NOI Unit 682-303

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

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Created by Sonny Merfeld on November 01, 1995

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 682-304 ACRES: 26 VOL: 450 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-212 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: low windthrow risk. Productivity of site is moderate. Uneconomic, low volume area surrounding. Maintain setting width between units. Anticipate planting 5 acres of Alaska yellow cedar to maintain composition. Option: helicopter yarding.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 8/30/95 EIS R.Johnson.	SOILS/WATERSHED: Soils Tolstoi, McGilvery, Kaikli. Slopes 40-130%. Deleted about 7A N end due to very steep, cliff, and some low volume; low volume wetland SE corner (BMP 12.5); second growth NW and N center. Remaining unit: Full suspension is required due to high MMI soils near and upslope of an existing landslide in the northeast portion of the unit (about 3A), slopes over 75% (breaks around cliffs), and talus slope area with thin McGilvery. Partial suspension is required in the remainder of the unit due to high MMI soils and areas of forested wetland (BMPs 13.9, 12.5). Place the backline at the base of the large cliff. Road appears feasible, but conventional cable yarding only reach to first cliff up slope, 800' most of unit and 200 to 300' west third of unit (BMPs 13.9, 14.2). Road at bottom unit needs review for potential landslides, especially E of proposed unit (BMPs 13.5, 14.2, 14.3, 14.6, 14.7, 14.12). Proposal to convert to helicopter yarding desirable for protection of watershed resources (BMP 13.9).
K. McCartney, B. Johnston, 5/30/96	FISHERIES: No stream concerns in the unit.
D.Parker, J.Wrate 7/20/95 B. Johnston, K.McCartney 5/30/96	WILDLIFE: Deer browse seen in unit. Bear scat seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. If the current definition of an estuary is maintained then the class I stream to the south of this unit will require a 1000 foot buffer. This may effect the acerage of this unit.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96 J.Short 5/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS: Retain at least 50% of the stand in the NW lobe of the unit to blend the backline to the shape of the landform.
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Full suspension required in the northeast section of the unit, slopes over 75%, and on the talus slope area. Partial suspension remainder of unit place backline at base of large cliff. Recommend converting to helicopter yarding for the protection of watershed resources.

Chastina Study Area Interim Layout NOI Unit 682-304

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Warfield on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

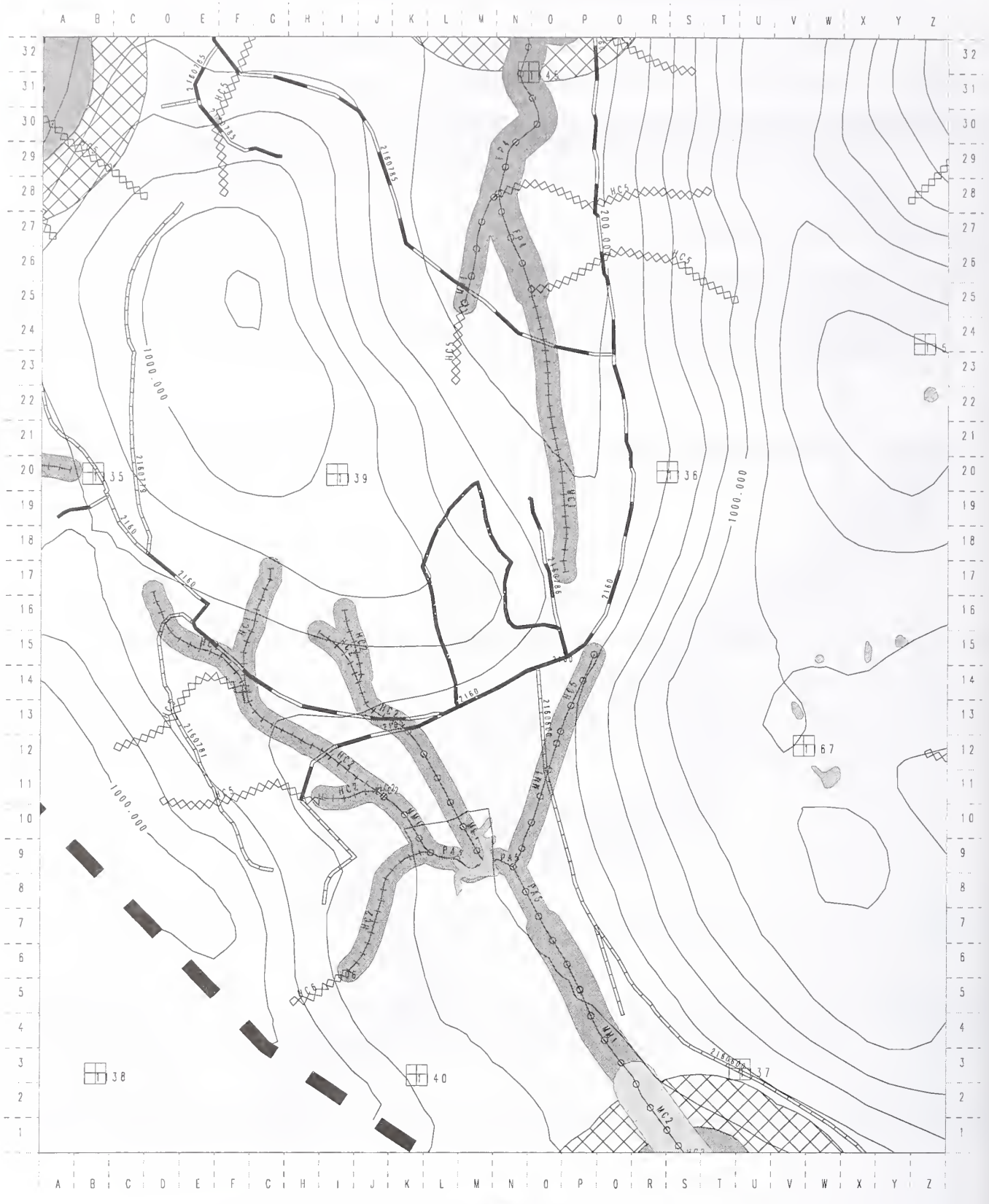
VCU-UNIT#: 682-305 ACRES: 31 VOL: 465 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: '91-490-87 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS /HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: 68201-10, high windthrow risk, portion downhill yarded. Within designated old growth reserve. Productivity of site is low. If road comes from the west the unit can be cable logged. Adjacent to old second growth. Anticipate planting 10 acres of Alaska yellow cedar to maintain composition. Difficult road building to the east. Option: helicopter yard.
J. Oien 5/96	ROADS: No concerns.
R.Johnson. 6/96	SOILS/WATERSHED: Soils mapped 3D (Vixen - Traitors 35-60%) and 29D (McGilvery 35-60%). Addition on W soils mapped 29D and 6 (McGilvery - Traitors 60-100%). Minimum partial suspension MM13 and McGilvery (BMP 13.9; TLMP 1991). Doubt whether suspension feasible over cliffs east side of unit, and rock outcrops and concave slope SW side of ridge, may need helicopter yard top (BMP 13.9). Potential unit with addition exceeds standards for McGilvery; therefore addition should be deleted (TLMP 1991). Probable stream needing protection SW portion unit (BMP 13.16). Proposal to convert to helicopter yarding desirable for protection of watershed resources (BMP 13.9).
K. Buckley 7/96	FISHERIES: Probable streams in unit needing protection. Stream protection measures will be identified during unit layout.
M.Dillman 7/96	WILDLIFE: Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Due to the fact that this unit is within an old growth reserve it has not been surveyed by wildlife. If current policy changes and this unit is to be harvested, wildlife will need the opportunity to conduct surveys in the area, prior to harvest.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: Although scheduled for survey in 1996, field inspection indicated the unit was unlikely to contain cultural resources. No survey was conducted. There are no concerns with the unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Minimum partial suspension.

Chasina Study Area Interim Layout NO1 Unit 682-305

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

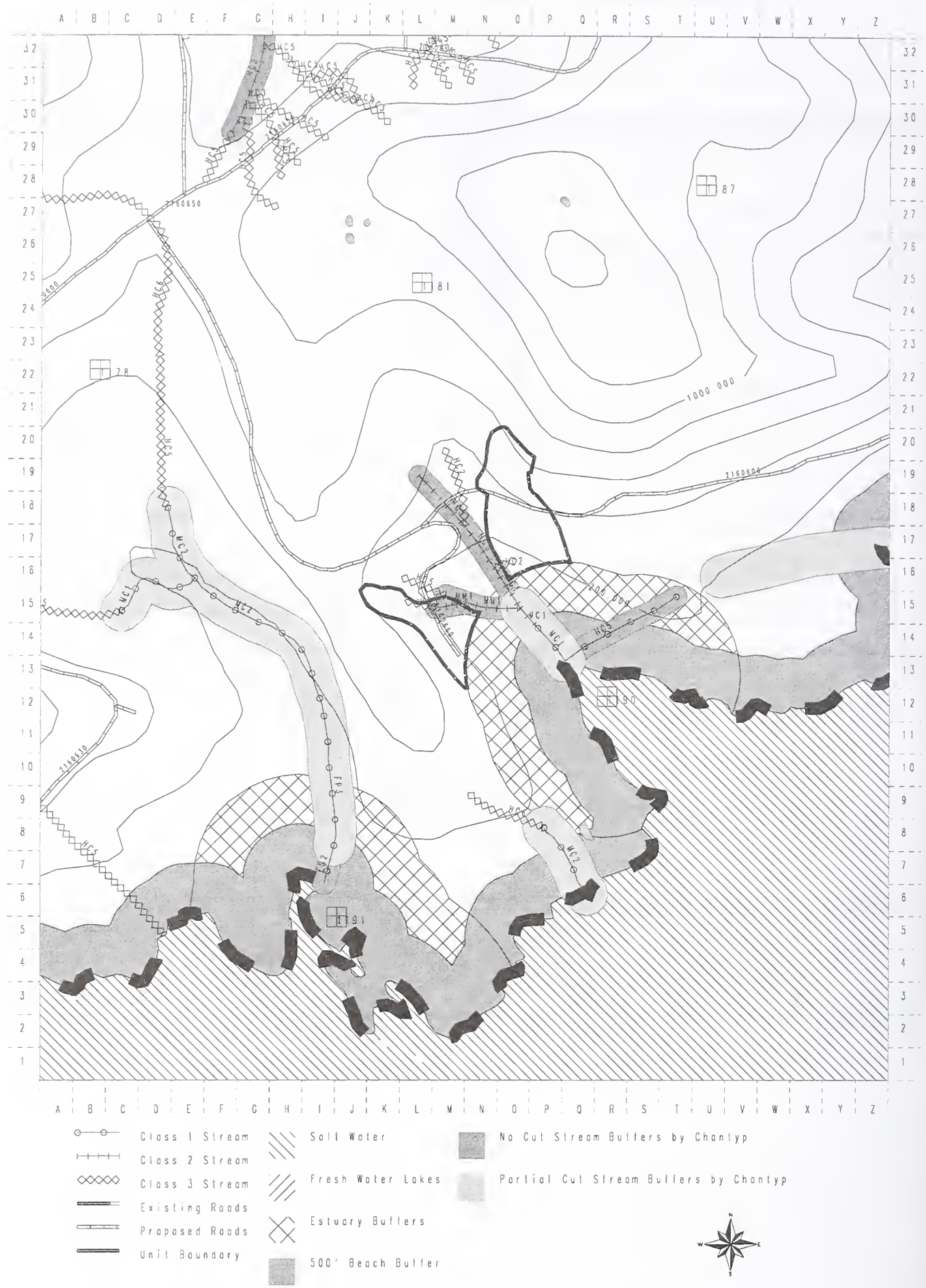
VCU-UNIT#: 682-306 ACRES: 43 VOL: 633 MBF ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-171 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk, portion downhill yarded. Productivity of site is low. Uneconomic, low volume area surrounding and in center portion. More value available if road comes from above. Stay out of estuary buffer. Partial cut buffer. Option: helicopter yarding. Dropped 13 acres due to estuary buffer.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr 9/19/95 EIS R.Johnson.	SOILS/WATERSHED: Soils Tolstoi, McGilvery, Kaikli, StNicholas. Slopes 20-80%; 3A greater than 75%. Deleted NE corner cliffs; stream buffers center unit; about 13 A low volume; estuary buffer. Remaining unit: A minimum of partial suspension is required throughout the unit due to high MMI soils and about 20A forested wetlands (BMPs 12.5, 13.9). See fisheries prescription of buffer requirements on stream complex in the valley bottom; includes floodplain riparian (BMPs 12.6, 12.6a). Two other streams for O&W protection, one stream for G&W protection. Two smaller streams need no protection (BMP 13.16). Potential add about 4A NE corner. Road into unit appears feasible (BMP 14.2). Additional roading required access E half due benches. Possible conversion to helicopter yarding would eliminate impacts of roads (BMP 14.1).
J. Hannon 7/10/95	FISHERIES: Stream 1 is a class I blue/ white that requires a 100' TTRA buffer (BMP 12.6). Stream 1 changes into a class III orange/ white above 340' of elevation. Stream 1 will require timing for the road crossing (BMP14.14). Stream 2 is a class III orange/ white. Stream 3 is a class III green/ white. Stream 4 is a class II orange/ white that requires a 120' AHMU buffer (BMP 12.6). Stream 4a is a class II orange/ white that requires a 120' AHMU buffer (BMP 12.6). The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The class III green/ white stream require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman, J.Wrate 7/10/95 C.Tighe, B.Johnston 5/30/96	WILDLIFE: Blowdown and second growth present. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/30/96 Deer sign and pelllets seen in unit. Unit also has game trails throughout. Karst was found along the eastern portion of the unit. The southern portions of both parts of this unit may have to be dropped depending on the final definition of an estuary and its required buffer. As the unit is now mapped in GIS the southern portions are both in estuary buffers and will need to be dropped. PacificYew trees were found in the unit.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The lower portions of this unit were surveyed in 1996. No cultural resources were noted. There are no concerns with this unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. O&W streams require DF, full over or SY, and cleaning of introduced debris immediately. G&W streams requires DF, SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Minimum partial suspension. Conversion to helicopter yarding would eliminate the impacts of roading this unit. "Unit added from the preferred alternative due to proportionality based on acres."

Chasina Study Area Interim Layout NOI unit 682-306

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

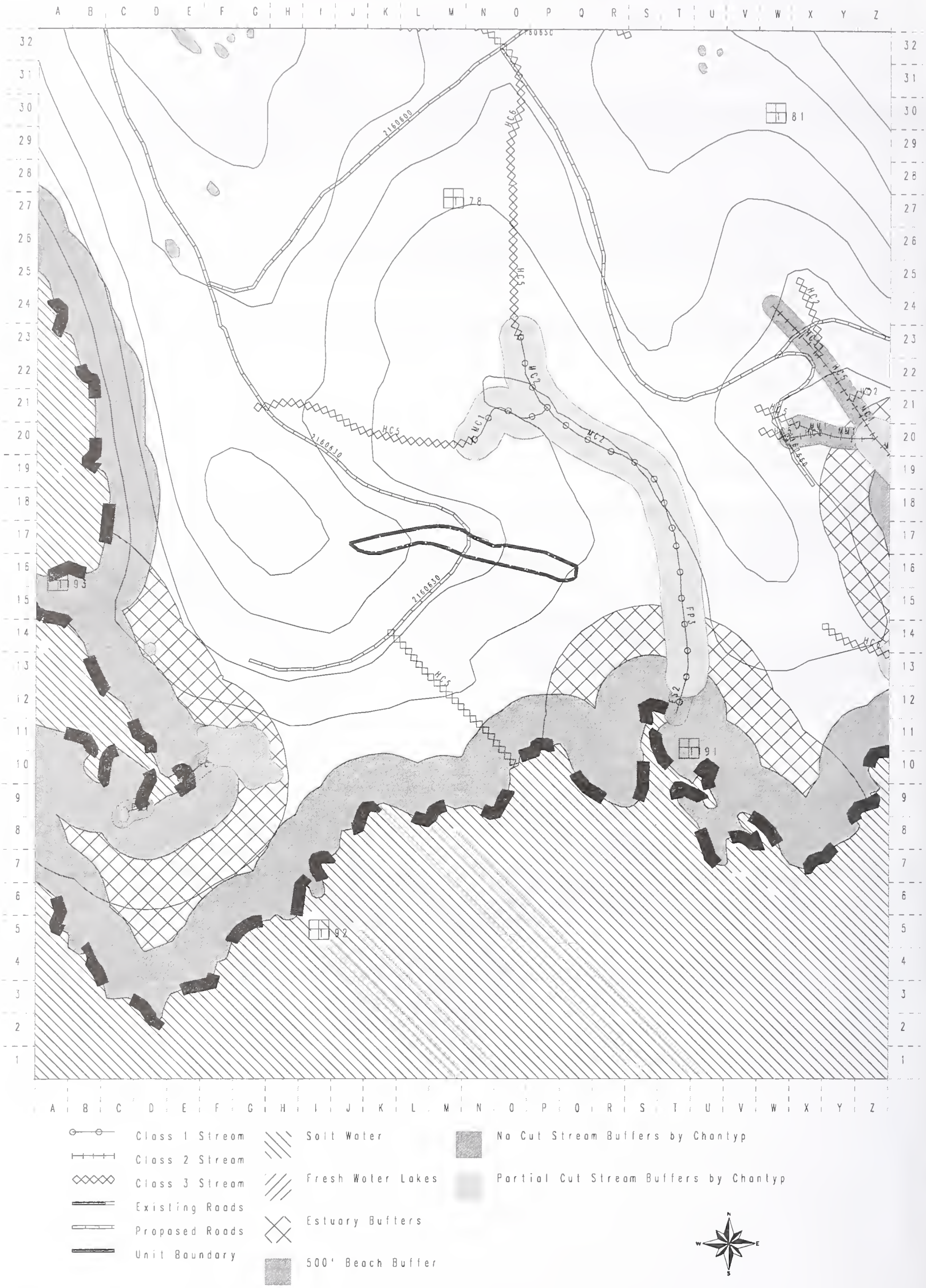
VCU-UNIT#: 682-307 ACRES: 10 VOL: 270 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '91-390-172 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk, mod. mistletoe present. Productivity of site is moderate. Uneconomic, low volume area surrounding. Maintain setting width between units. Steep slope may limit yarding. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection (682-302).
J. Oien 5/96	ROADS: No concerns - evaluate for cable log.
Field D.J. Landwehr 9/13/95 EIS R. Johnson	SOILS/WATERSHED: Portion above cliff in 682-302 made into this helicopter unit. Soils McGilvery. Slopes less than 45%. Unit should not be harvested for compliance with TLMP (1991). Monitor McGilvery if harvested. Very high potential blowdown top of ridge.
K. Buckley, C. Tighe, 5/30/96	FISHERIES: No streams found in unit.
D.Parker, J.Wrate 7/19/95 C.Tighe, B.Johnston 5/29/96	WILDLIFE: Deer sign throughout unit. No understory vegetation. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit has good wildlife snags. Good goshawk habitat in unit. This unit is the helicopter portion of unit 682-302.
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. If harvested, will not comply with TLMP (1991) standards and guidelines for McGilvery soils.

Chasina Study Area Interim Layout NOI Unit 682-307

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Werfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

VCU-UNIT#: 682-500 ACRES: 73 VOL: 1971 MBF ALTERNATIVES: 4,5,6

PHOTO YR/#: 91-490-87 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk, portion downhill yarded. Within designated old growth reserve. Productivity of site is moderate. Partial cut buffer. Delete scrub volume surrounding. Road terminates at last landing. Get road as high as possible on bench. Split-yarding required on stream.
J. Oien 5/96	ROADS: No concerns.
R. Johnson 6/96	SOILS/WATERSHED: Soils mapped 75D (Kupreanof - McGilvery 35-60%) and 33D (StNicholas - McGilvery 35-60%), with 74E (Kupreanof 60-75%), 25 (Kaikli - Kina 0-40%), 32D (StNicholas 35-60%), 29D (McGilvery 35-60%), and cliffs. Agree with redesign by timber to avoid cliffs, steep, McGilvery on W, low volume wetlands on NE, and riparian and open wetlands on SE (BMPs 12.6, 12.5; TLMP 1991). Agree addition on SW. Proposal to connect with and include W portion of 682-501 with 628-500 now abandoned. See unit card 682-501 for additional information. Partial suspension for forested wetlands, MM13, McGilvery (BMPs 12.5, 13.9; TLMP 1991). Streams in unit needing protection (BMP 13.16).
S. Deck, M. Solomon, K. Kitchel 7/11/96	FISHERIES: Stream 1 is a class III orange/ white until its confluence with stream 5; then it becomes a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 4 is a class III orange/ white. Stream 5 is a class IV green/ white. Stream 6 is a class III orange/ white. Stream 7 is a class IV green/ white. Stream 8 is a class IV green/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, B.Johnston 9/11/95 M.Dillman 8/96	WILDLIFE: Game trails, pellets, and browse in unit. Snags present. Unit is within an important wildlife travel corridor. Therefore, recommend partial harvest to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit is within an old growth reserve and as a result was not surveyed by wildlife in 1996. If current policy changes and this unit is to be harvested, wildlife will need the opportunity to survey the area prior to harvest.
J. Short 5/96	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: Although scheduled for survey in 1996, field inspection of this unit indicated it was unlikely to contain cultural resources. No survey was conducted. There are no concerns with the unit as planned. VISUALS: Leave (2) 5-acre peninsulas extending from a couple of points along southern half of backline. For about 400 feet in from SE boundary leave 1/2 of trees for structure and to soften edge of unit.
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut, use buffers as retention. Partial suspension required.

Chastina Study Area Interim Layout NOI Unit 682-500

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Warfield on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

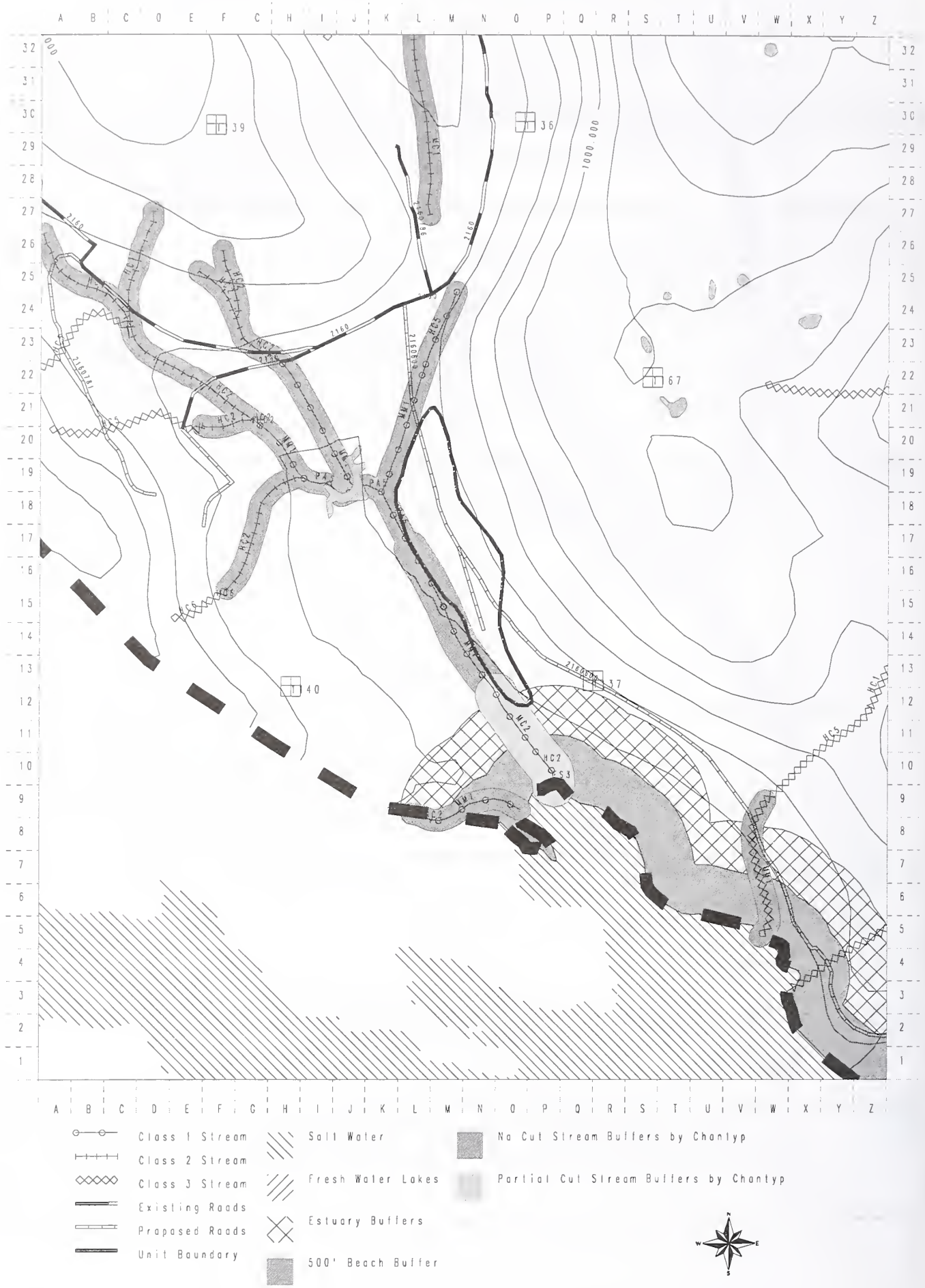
VCU-UNIT#: 682-501 ACRES: 34 VOL: 850 MBF ALTERNATIVES: 5,6

PHOTO YR/#: '91-490-134 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: , high windthrow risk, portion downhill yarded. Within designated old growth reserve. Retain stand structure for wildlife where feasible. Productivity of site is moderate. Road to come from north rather than west. Partial cut buffer. Stay out of swamps / beaver ponds. Drop SW portion across ponds.
J. Oien 5/96	ROADS: No concems.
R.Johnson. 10/20/95	SOILS/WATERSHED: Remaining portion of unit is E of N to S flowing stream on bottom. Buffer out flat riparian on bottom above main stream (BMPs 12.6, 12.6a). Unit starts where slope breaks from flat to about 45%. Soils Tolstoi, Traitors, colluvial McGilvery, with forested wetlands on S end. Slopes 45-65%. Upper backline to E about 500', below discontinuous rock walls and disturbance. Upper backline S end drops due disturbance. Still areas blowdown in unit. Deleted low volume S end unit (BMP 12.5). Numerous O&W and G&W streams needing protection not shown on unit card (BMP 13.16). Partial suspension for protection of G&W, non-streams, McGilvery, forested wetlands (BMPs 12.5, 13.9, 13.16; TLMP 1991). Keep roads above riparian in bottom (BMPs 12.6, 12.6a, 14.2). W portion of unit deleted. Still feasible to log by connecting to 682-500 and 2160-600 road, but should delete: low volume wetland in center of unit and riparian W of main stream (BMPs 12.6, 12.5); and McGilvery knob SW corner, and hill to N with McGilvery and cliffs (TLMP 1991). Partial suspension for forested wetlands, MMI3, McGilvery (BMPs 12.5, 13.9; TLMP 1991). Streams needing protection not yet designated on unit card (BMP 13.16), especially for area added between units.
D.Kuntzsch, J.Frank 10/12/96	FISHERIES: Only the mainstem was surveyed; numerous small streams will need to be identified and have protection measures applied during layout. The southern end of the unit lies within an estuary buffer and will need to be deleted. The mainstem is a class II blue/ white (TTRA) stream within the unit. The lower reach requires a 120' TTRA buffer (BMP 12.6). Upstream of this reach is a beaver pond chain complex; it requires a 500' TTRA buffer (BMP 12.6). The road requires fish passage and may also require timing (BMP 14.14, 14.6).
M.Dillman, B.Johnston 8/30/95 M.Dillman 8/96	WILDLIFE: Deer and bear sign throughout entire unit. Many game trails seen. Unit is within an important wildlife travel corridor. Therefore recommend partial harvest to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. The extreme southern tip of this unit is in an estuary buffer, as it is currently defined, and will have to be dropped. This unit is within an old growth reserve and so was not surveyed by wildlife in 1996. If current policy changes and this unit is to be harvested, wildlife will need the opportunity to survey this area prior to harvest.
	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: Survey of this unit was conducted in 1996 in hopes of finding remnants of the historic town of Baldwin. No cultural resources were noted. There are no concerns with this unit as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. O&W streams require DF, full over or SY, and cleaning of introduced debris immediately. G&W streams requires DF, SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. Partial suspension required.

Chasina Study Area Interim Layout NOI Unit 682-501

Mapscale 1:15840 (4 inch to Mile)



Created by Sally Merfeld on November 01, 1996

CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

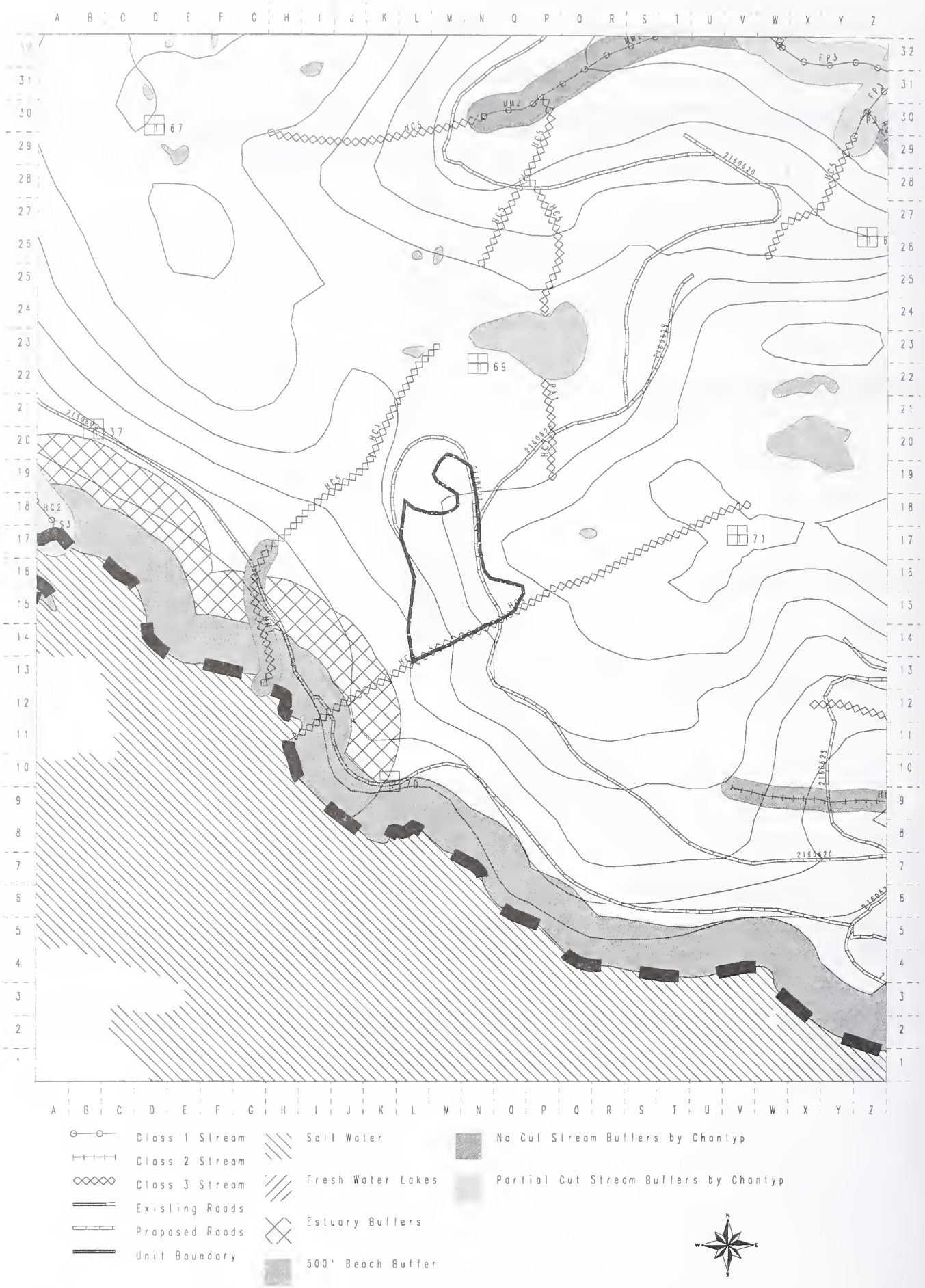
VCU-UNIT#: 682-502 ACRES: 30 VOL: 712 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '91-490-133 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: High windthrow risk. Within designated old growth reserve. Productivity of site is moderate. Field checking alternative regeneration methods. Difficult terrain - potential blind leads in center of unit. Verify feasibility and modify unit bdry as required. Profiles needed. Suspension requirements (see soils or fish).
J. Oien 5/96	ROADS: No concerns.
R.Johnson. 6/96	SOILS/WATERSHED: Soils mapped 4D (Helm 35-60%), 2D (Traitors 35-60%), with 3D (Vixen - Traitors 35-60%), 48C (Helm - Kitkun 5-35%). Visuals deleted lower 3/5 of unit. Remaining appears steeper than mapped. Partial suspension for forested wetlands, MM13 on slopes over 60%, potential rock and McGilvery (BMPs 12.5, 13.9; TLMP 1991). 2160-620 road may not be practical because of slope and probable full bench construction (BMPs 14.2, 14.3, 14.6, 14.7, 14.12). Probable need protection for stream on S boundary, and streams in unit (BMPs 12.6a, 13.16).
K. Buckley 7/96	FISHERIES: Office review determined possibility of stream concerns in south part of unit. If unit is selected for harvest field review will be necessary.
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve. If current policy is changed and this unit is to be harvested, recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if unit is harvested, wildlife will need to survey the area prior to harvest. Unit was not surveyed by wildlife in either 1995 or 1996
T.Fifield 10/28/96	GEOLOGY/MINERALS: LANDS: CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS:
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut. Partial suspension required.

Chastina Study Area Interim Layout NO1 Unit 682-502

Mapscale 1:15840 (4 inch to Mile)



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CHASINA PROJECT HARVEST UNIT DESIGN CARD DRAFT

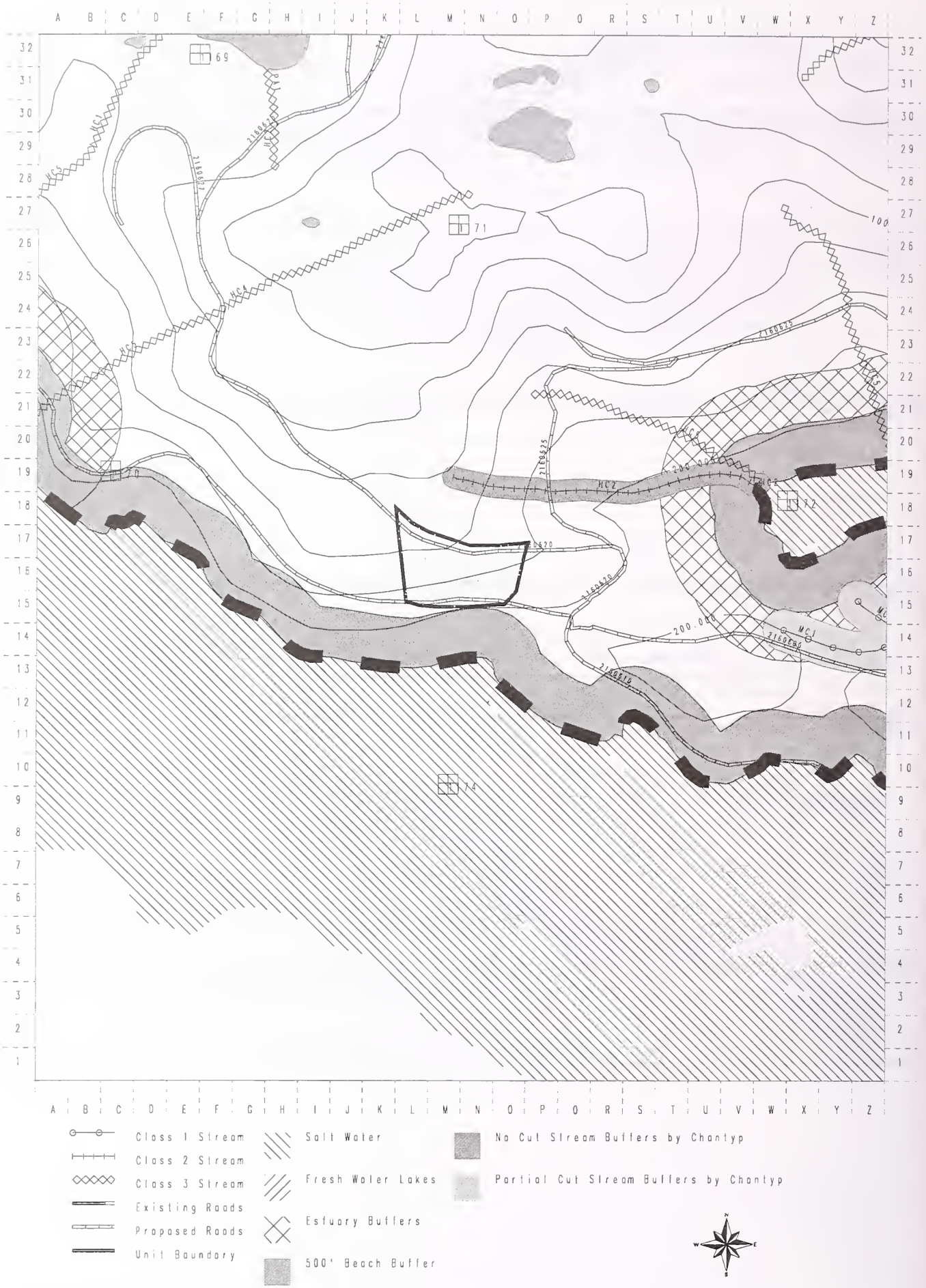
VCU-UNIT#: 682-503 ACRES: 19 VOL: 257 MBF ALTERNATIVES: 4,6

PHOTO YR/#: '91-490-133 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 5/96	SILVICULTURE/TIMBER: Low windthrow risk . Retain stand structure for wildlife where feasible. Productivity of site is low. Decreased in size for visual sensitivity. Option: helicopter yarding.
J. Oien 5/96	ROADS: No concerns.
R.Johnson. 6/96	SOILS/WATERSHED: Soils mapped 2D (Traitors 35-60%), 33D (StNicholas - McGilvery 35-60%), with 4D (Helm 35-60%). W 2/3 deleted for visuals. Partial suspension remaining primarily forested wetlands and McGilvery (BMPs 12.5, 13.9; TLMP 1991). Doubt upper 2160-620 road will meet grade as planned. Not appear suspension possible from lower 2160-600 road because topography and convex slope. Probable streams in unit needing protection, and adjacent E side depending on location of boundary (BMPs 12.6a, 13.16).
K.Buckley 7/96	FISHERIES: Probable streams in unit needing protection. Stream protection measures will be identified during unit layout.
M.Dillman 7/96	WILDLIFE: This unit is within an old growth reserve and so was not surveyed by wildlife in 1995 or 1996. If current policy changes and this unit is harvested, partial cut is recommended because this unit has been identified as an important wildlife travel corridor. This will help maintain forest structure and lessen the impact on wildlife migration and dispersal. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Also, if this unit is harvested, wildlife will need to survey the area prior to harvest.
J. Short 5/96	GEOLOGY/MINERALS: LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned. VISUALS: Entire unit harvested in a way that retains at least 50% of stand throughout every acre of unit or creates about (5) 1-2 acre openings dispersed throughout unit. If harvest can be extended further to the NW along this slope a few additional 1 acre openings could be created.
G.Lawton 5/96	PRESCRIPTION: Clear-cut w/ reserves: retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Partial suspension is required.

Chassahowitzka Study Area Interim Layout NOI Unit 682-503

Mapscale 1:15840 (4 inch to Mile)



Class 1 Stream
Class 2 Stream
Class 3 Stream
Existing Roads
Proposed Roads
Unit Boundary

Salt Water
Fresh Water Lakes
Estuary Buffers
500' Beach Buffer

No Cut Stream Buffers by Chantyp
Partial Cut Stream Buffers by Chantyp

Created by Sally Werfeld on November 01, 1996

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